D-321

SERVICE MANUAL

US Model
AEP Model
UK Model
E Model
Australian Model
Tourist Model

Model Name Using Similar Mechanism	NEW
CD Mechanism	KSM-331CAN (S)

SPECIFICATIONS

System: Compact disc digital audio system

Laser diode properties:
Material: GaAlAs
Wavelength: λ = 780 nm
Emission duration: Continuous
Laser output: Less than 44.6 μW
(This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block.)

Error correction: Sony Super Strategy Cross Interleave Reed Solomon Code

D-A conversion: 1-bit quartz time-axis control

Frequency response: 20 – 20,000 Hz $\pm\frac{1}{2}$ dB
(measured by EIAJ CP-307)

Output (at 4.5 V input level):
Line output (stereo minijack)
Output level 0.85 V rms at 50 kilohms
Load impedance over 10 kilohms
Optical digital output (optical output connector)
Output level: –21 — –15 dBm
Wavelength: 630 — 690 nm at peak level
Headphones (stereo minijack)
4 mW + 4 mW at 16 ohms

General

Power requirements:

Supplied:
- Rechargeable battery
- Battery case for use of two alkaline batteries (not supplied)
- DC IN 4.5 V jack accepts the Sony AC power adaptor for use on:

Where purchased	Operating voltage
AEP	220 — 230 V AC, 50 Hz
US	120 V AC, 60 Hz
E	110 — 240 V AC, 50/60 Hz
UK, Australian	240 V AC, 50 Hz
Other countries	100 — 240 V AC, 50/60 Hz

Not supplied:
- DC IN 4.5 V accepts the Sony CPM-300PK mount arm for use on car battery
- DC 3 V, two size AA (LR6) alkaline batteries

Dimensions: Approx. 132.5 × 25.9 × 155.3 mm (5 1/4 x 1 1/16 x 6 1/8 in.) (w/h/d) incl. projecting parts and controls

Mass: Approx. 340 g (12.4 oz) incl. rechargeable battery

Supplied accessories:
AC power adaptor (1)
Rechargeable battery (1)
Battery case (1)
Connecting cord (phono plug x 2 ↔ stereo miniplug) (1)
Stereo headphones with remote commander (1)
Carrying case (1)

Design and specifications are subject to change without notice.

Note
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

Accessories not supplied
Mount arm CPM-300PK
Car connecting pack CPA-3, CPA-4, CPA-5RM
Car battery cord DCC-E145L
Active speaker system SRS-58
Rechargeable battery BP-DM10

Your dealer may not handle some of the above listed accessories. Please ask the dealer for detailed information about the accessories in your country.

MICROFILM

COMPACT DISC COMPACT PLAYER

SONY®

TABLE OF CONTENTS

Section	Title	Page
1.	GENERAL	3
2.	SERVICE MODE	4
3.	ELECTRICAL ADJUSTMENTS	8
4.	DIAGRAMS	
4-1.	IC Pin Function Description	12
4-2.	Block Diagram	17
4-3.	Semiconductor Lead Layouts	21
4-4.	Printed Wiring Boards —MAIN Board Suffix-11 Model—	22
4-5.	Schematic Diagram —MAIN Board Suffix-11 Model—	25
4-6.	Schematic Diagram —MAIN Board Suffix-13 Model—	29
4-7.	Printed Wiring Boards —MAIN Board Suffix-13 Model—	33
4-8.	IC Block Diagrams	36
5.	EXPLODED VIEWS	
5-1.	Cabinet Section 1	41
5-2.	Cabinet Section 2	42
5-3.	Optical Pick-Up Block Section	43
6.	ELECTRICAL PARTS LIST	44

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SERVICING NOTES

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.

During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.

The flexible board is easily damaged and should be handled with care.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 ℃ during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip componet replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Before Replacing the Optical Block

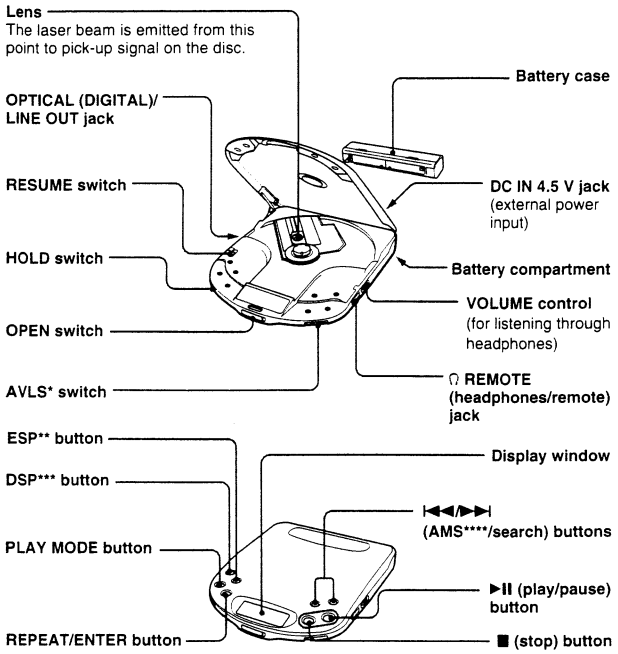
Please be sure to check thoroughly the parameters as par the "Optical Block Checking Procedures" (Part No. : 9-960-027-11) issued separately before replacing the optical block. Note and specifications required to check are given below.

- FOK output : IC601 ㉓ pin
- S carve P-to-P value : 1.5Vp-p
  When checking S curve P-to-P value, break the solder jumper to open the JP(FE) and remove the lead wire to disc motor.
- RF signal P-to-P value : 0.7Vp-p
- Traverse signal P-to-P value : 0.5Vp-p
- The grating holder can not repair.

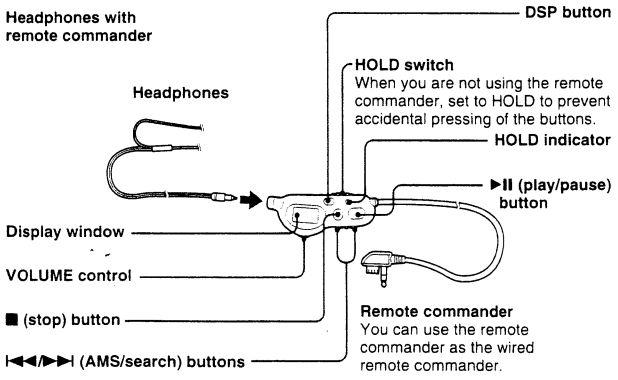
SECTION1
GENERAL

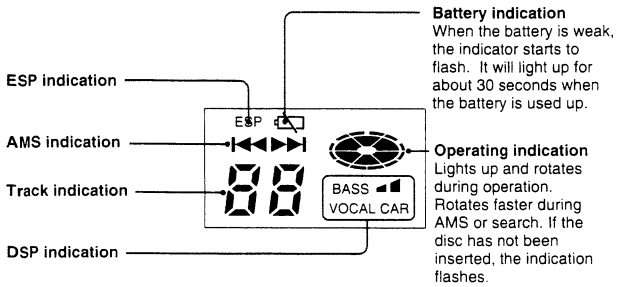
This section is extracted from instruction manual.

Location and Function of Controls



*AVLS: Automatic Volume Limiter System
**ESP: Electronic Shock Protection
***DSP: Digital Signal Processing
****AMS: Automatic Music Sensor


Headphones with remote commander
DSP button
HOLD switch
When you are not using the remote commander, set to HOLD to prevent accidental pressing of the buttons.
Headphones
HOLD indicator
⏯ (play/pause) button
Display window
VOLUME control
■ (stop) button
Remote commander
You can use the remote commander as the wired remote commander.
⏮/⏭ (AMS/search) buttons


Battery indication
When the battery is weak, the indicator starts to flash. It will light up for about 30 seconds when the battery is used up.
ESP indication
ESP
AMS indication
Operating indication
Lights up and rotates during operation. Rotates faster during AMS or search. If the disc has not been inserted, the indication flashes.
Track indication
BASS
VOCAL CAR
DSP indication

Before using
Connect the headphones to the remote commander securely. A loose connection may cause noise during playback.

When you connect the remote commander to the unit
Make sure that the player is in the stop mode.

When you do not use the remote commander
Detach the remote commander from the ∩ REMOTE jack to avoid battery consumption caused by accidental operation of the commander.

Is it possible to operate other compact disc compact players with the supplied remote commander?
Basically yes. However, some models are not operative.

Controlling the volume with the remote commander
Set the VOLUME control of the remote commander to MAX.
Using the VOLUME control on the unit, adjust the volume to the level that you want to be the maximum when adjusting with the VOLUME control on the remote commander.

Headphones with stereo miniplug
You can use the optional headphones with stereo miniplug with this unit.

Note
The ESP cannot be adjusted with the remote commander.

SECTION2
SERVICE MODE

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block.

Therefore, when checking the laser diode emission, observe more than 30 cm away from the objective lens.

Laser Diode Check Procedure

The laser diode on this set will not emit unless the upper panel is closed and S810 (push switch type) is turned on.

The laser diode will always emit even if focus search is not performed in service mode.

The laser diode is checked using, the current value which flows to the laser diode inside the optical pick-up block.

Procedure 1 (service mode or normal operation)

Check the laser diode emission with the eye.

1. Open upper panel by pushing the OPEN button.
2. S810 on as Fig. 1.
   (In service mode, this operation is not necessary.)
3. Press the ▶II key.
   (In service mode, this operation is not necessary.)
4. Observe the objective lens and confirm that the laser diode goes on about 2.5 seconds due to focus search. If it does not, APC circuit or optical pick-up block is defective.

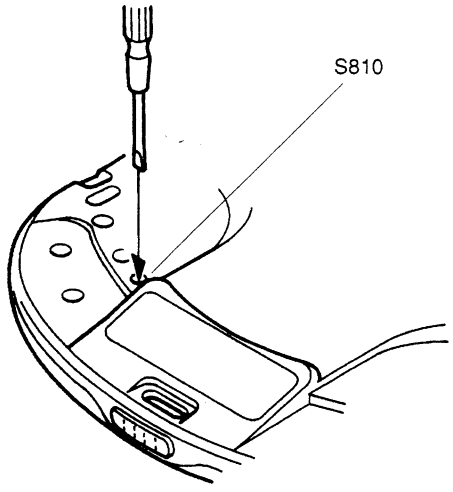


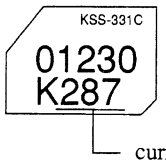
Fig. 1 Turning S810 on

Procedure 2 (service mode or normal operation)

Check by the current with flows in the laser diode.

1. Remove the cabinet.
2. Pick up the optical block by hand and look the rear side of it to see the follwing the label and rear the current value on the label.

   (Label on optical pick-up block)

   current value. This means 28.7mA.
   (The current value varies with the set.)
3. Connect a VOM as shown in fig.2.
   (both side of R501 : 1Ω)
4. Press the ▶II key.
5. Calculate the current by the VOM reading.
   VOM reading (V) = current (A)
   ex. VOM reading = 0.027V
   0.027 = 0.027(A) = 27 (mA)
6. Confirm that the ammeter reading is within the range given below.
   value on label $^{+5}_{-11}$mA (25℃)
   variation relative to temperature : 0.4mA/℃
   (Current increases when temperature rises and decreases when it drops.)

If the value is more than the range given, APC circuit has been defective or the laser diode has deteriorated.

If it is less, APC circuit of optical pick-up block is defective.

【MAIN BOARD】 (COMPONENT SIDE)

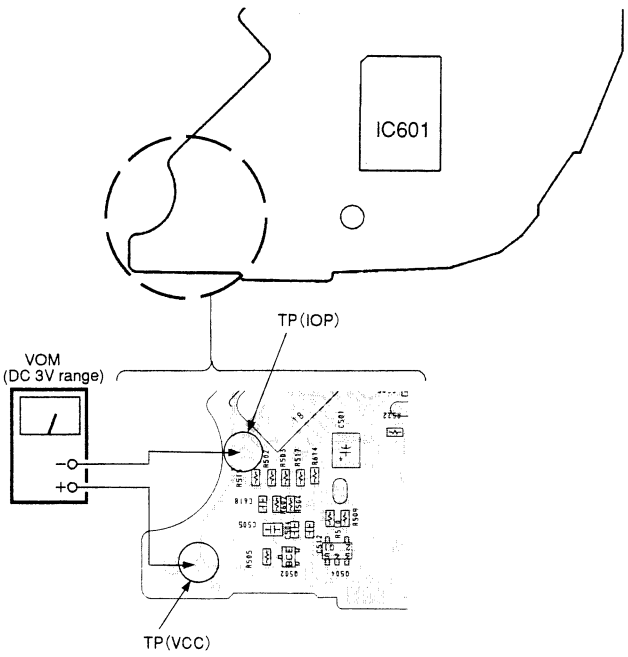
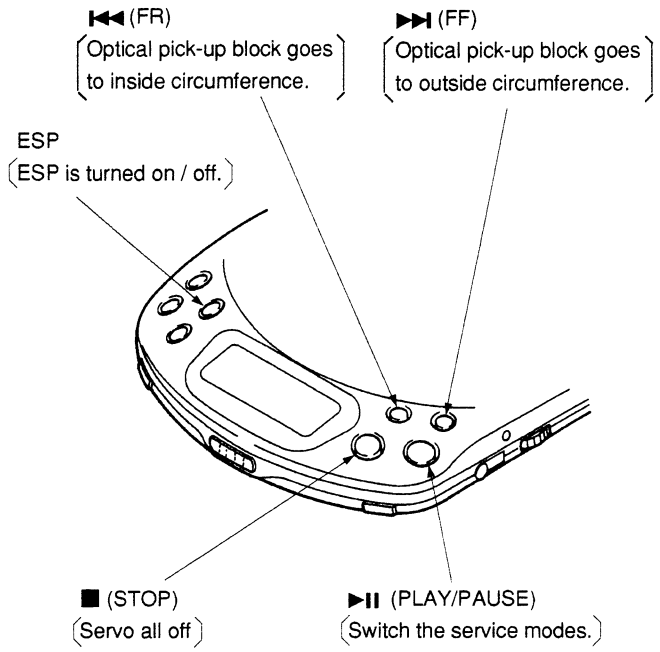


Fig. 2 VOM connecting

SERVICE MODE (service program)

This set has built-in service program in the microcomputer as usual sets.

The operation method of service program is explained below.



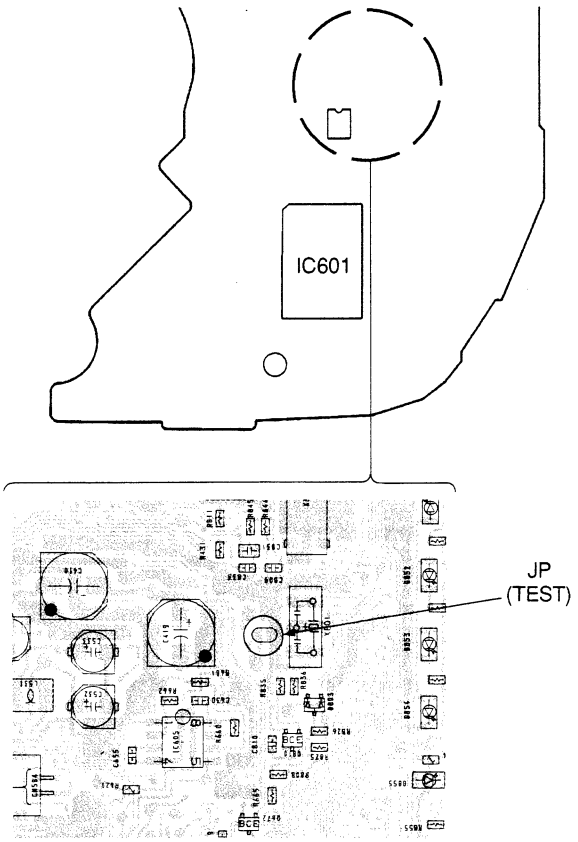
〔 〕: Main operation in service mode, for details, refer to step 2.

Fig. 3 Key Positions

· Step 1 (Service Mode setting method)

1. Solder jumper the TEST terminal (IC801 pin ⑱ (XTEST) is grounded.).
2. Plug in the external power supply.
   After performing the above procedure, the set is switched to service mode.

【MAIN BOARD】 (COMPONENT SIDE)



JP(TEST)
Solder jumper for the service mode. (After checking or adjusting in the service mode, be sure to remove this solder jumper.)

Fig. 4 TEST terminal

· **Step 2 (Service Mode operation)**

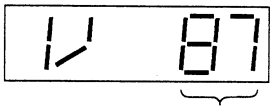
1. LCD Display Check mode
   This mode is selected immediately after selecting the service modes. In this mode, LCD display varies into six different patterns and these six patterns are repeated.
   When sliding to ON side the ESP switch in this mode, the ESP is on. (LCD ▒ mark lights up continuously.)
2. Each time the ▶II key is pressed, the modes are switched as follows.

⓪ LCD Display Check mode

Press the ▶II key.

① Automatic Voltage Adjustment mode

PWM output data (IC801 pin ④ output, PWM signal duty ratio) to control output voltage of DC/DC converter for servo system power supply is displayed in hexadecimal notation on the LCD. (00-FF)



The data appeared are "87" in ESP off and "A5" in ESP on. If data is "00" or "FF", the DC/DC converter may be failure.

Optical pick-up can be moved on and after this mode.
Movement of optical pick-up··· The optical pick-up moves to outside track when the ▶▶I key is passed.
The optical pick-up moves to inside track when the I◀◀ key is passed.

【MAIN BOARD】 (COMPONENT SIDE)

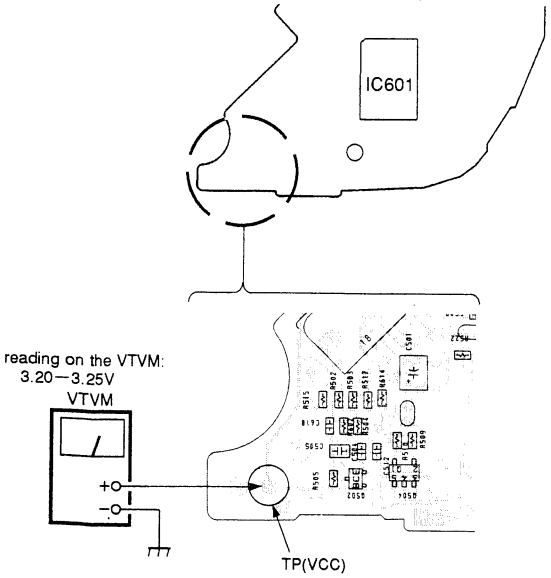
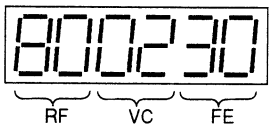


Fig. 5 Vcc check

Press the ▶II key.

② Automatic Average Adjustment mode

DC offset value of RF voltage (IC601 pin ㉖ input) against VC voltage (IC601 pin ㉚ input), and FE voltage (IC601 pin ㉙ input) against VC voltage (IC501 pin ⑨) is displayed in hexadecimal notation on the LCD.



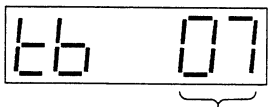
Faulty if the display is "00 00 00" or "FF FF FF".

* The laser is turned off in this mode.

Press the ▶II key.

③ Automatic Tracking Balance Adjustment mode

The focus is turned on from the focus search, then the disc motor runs and Automatic Tracking Balance Adjustment mode is activated, if a disc is loaded on the turn table.
A 4-bit tracking balance data is displayed in hexadecimal notation on the LCD.
At this time, optical pick-up can be moved with the ▶▶I or I◀◀ key.



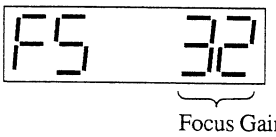
Faulty if the display data is "00" or "FF".

Focus search is repeated many times, if a disc is not loaded on the turn table. In this case, load a disc on the turn table and perform confirmation.

Press the ▶II key.

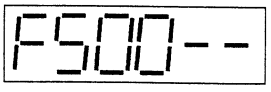
④ Automatic Focus Gain Adjustment mode

The focus gain is displayed in hexadecimal notation on the LCD.
Normal, if approximately "28" is displayed with YEDS-18 disc loaded.



Focus Gain

If focus servo is faulty, "--" is displayed as shown below.

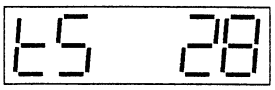


Press the ▶II key.

⑤ Automatic Tracking Adjustment mode

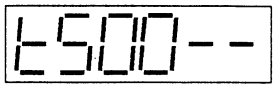
The tracking gain is displayed in hexadecimal notation on the LCD. (00-FF)

Normal, if approximately "19" is displayed with YEDS-18 disc loaded.



tracking gain

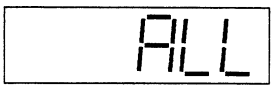
If tracking servo is faulty, "--" is displayed as shown below.



Press the ▶II key.

⑥ Audio signal is output.

"All" is displayed on the LCD.



3. When the ■ key is pressed, all servo systems (focus, tracking and sled) are turned off and the LCD Display Check mode is restored. However, the disc motor will run for a while due to inertia.

· Step 3 (Service Mode release)

1. First be sure to unplug the external power supply, then remove the TEST terminal solder jumper.
2. The set will now operated normally.

SECTION3
ELECTRICAL ADJUSTMENTS

Notes on Check Adjustment

1. Confirmation/adjustment should be performed after selecting a service mode. The service mode must be cancelled after confirmation/adjustment is finished.
   (Refer to "Service Mode (service program)" on page 5.)
2. Confirmation/adjustment should be performed in the order listed.
3. Use YEDS-18 disc (part No. : 3-702-101-01) unless otherwise indicated.
4. Power supply voltage : DC4.5V
   HOLD switch : OFF
   VOL knob : Minimum
   AVLS switch : OFF
   RESUME switch : OFF
   ESP switch : OFF (mark : light-out)

PREPARATION

Put the set into STOP condition in service mode (See page 5) and perform the following checks. Repair if there are any abnormalities.

· Sled Motor Check

1. Press the ▶II key once, then the ▶▶I and I◀◀ keys to confirm that the optical pick-up moves to inside track → outside track → inside track smoothly free from sticking or noise.
   ▶▶I : optical pick-up block moves outward
   I◀◀ : optical pick-up block moves inward

· Focus Search Check

1. Press the ▶II key 3 times.
   (Focus search is performed continuously.)
2. Observe the optical pick-up block objective lens and check that it moves smoothly up and down with no catching or noises. (It is normal even if it stops for a moment during UP motion.)
3. Press the ■ key.
   Check that focus search operation stops. If it does not, press the ■ key again a little longer time.

VC Connecting Point

FOCUS BIAS CHECK
TRACKING BALANCE CHECK
S-CURVE CHECK

When performing the above confirmation, connect a negative terminal of oscilloscope to the TP (VC) as shown below.

【MAIN BOARD】(COMPONENT SIDE)

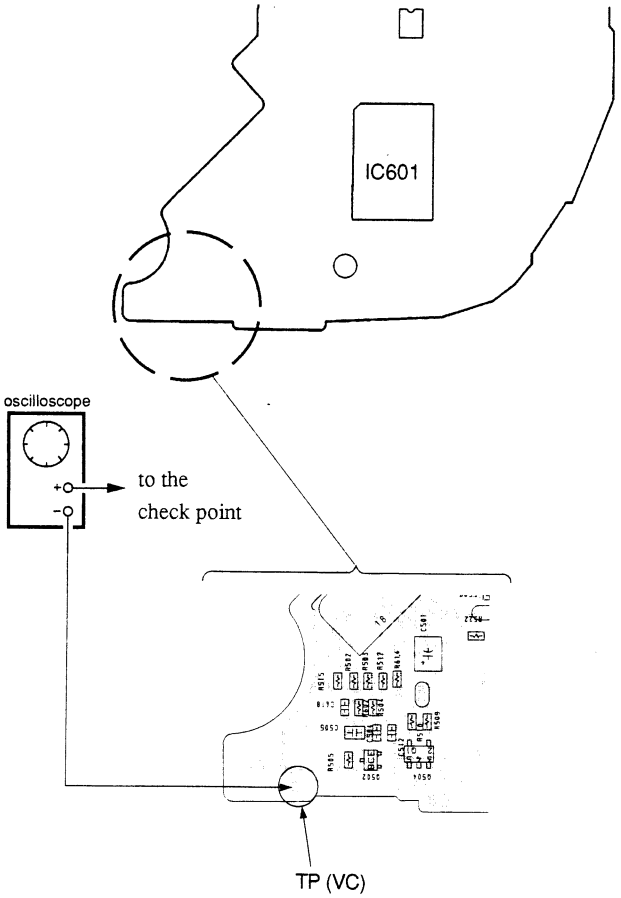
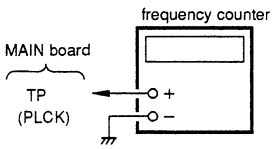


Fig. 6 VC connecting point

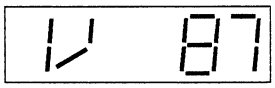
PLL Free Run Frequency Check and Adjustment

Check/Adjustment Procedure :



1. Solder to jumper the JP(ASY) of IC601 pin ㊳.
2. Check the ESP is OFF.
3. Connect a frequency counter to theTP (PLCK) of IC601 pin ㊸.
4. Select the Automatic Voltage Adjustment mode of service modes. (see page 6).

LCD Display



5. Confirm that the frequency counter reading is 4.3218±0.010MHz. If wrong, adjust RV650 so that reading becomes 4.3218±0.010MHz.
6. Cancel the service mode after adjsutment is over.(See page 7).
7. Break the solder jumper to open the JP(ASY).

【MAIN BOARD】 (COMPONENT SIDE)

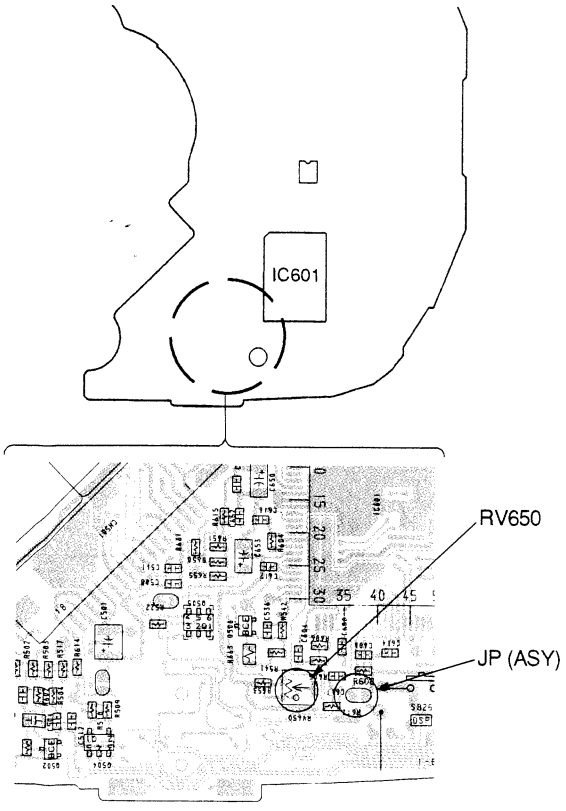


Fig. 7 PLL Free Run Frequency Adjustment Location

【MAIN BOARD】 (COMPONENT SIDE)

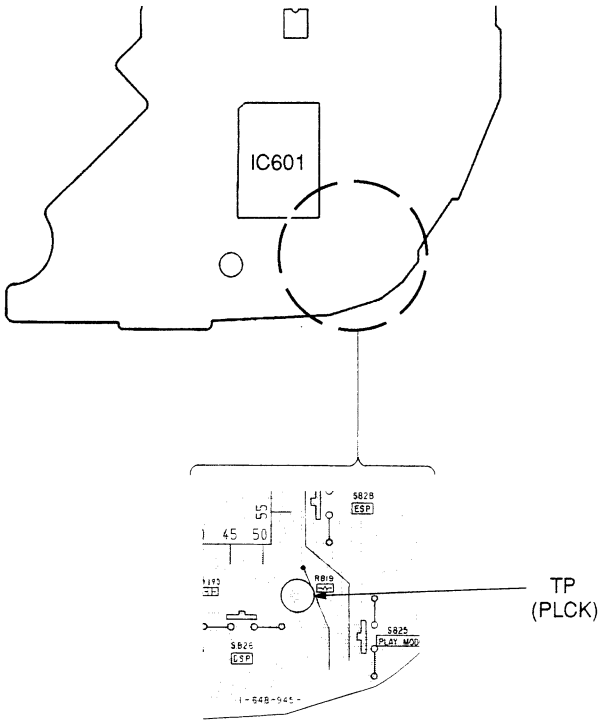


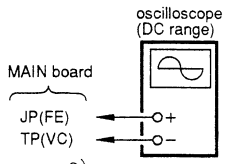
Fig. 8 PLL Free Run Frequency Check Location

S-Curve Check

Conditions :

The set should be placed either horizontally.

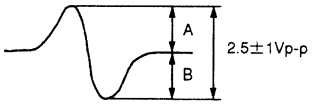
Check Procedure :



(See page 8)

1. Break the solder jumper to open the JP (FE).
2. Disconnect the connector (CN502) on the disc motor.
3. Connect a oscilloscope the to CN501 side of JP (FE) on the MAIN board.
4. Set the disc (YEDS-18).
5. Press the ▶II key 3 times to perform focus serch.
6. The A : B or B : A of waveform on oscilloscope must be within 2 : 1, and also the P-P value is 2.5±1Vp-p.

S-Curve check



7. After confirmation, solder to jumper the JP (FE) and the connector (CN502) to disc motor.

Check Location : MAIN board (COMPONENT SIDE)

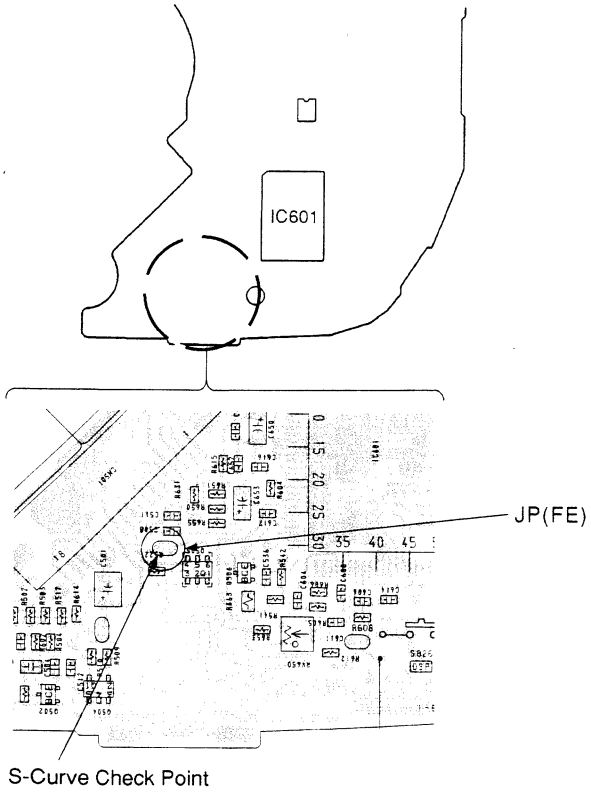


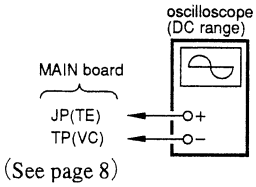
Fig. 9 S-Curve Check Location

Tracking Balance Check

Conditions :

The set should be placed either horizontally.

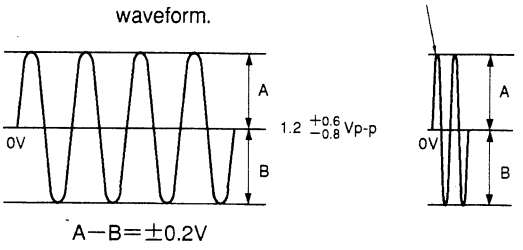
Check Procedure :



(See page 8)

1. Connect a oscilloscope to MAIN board JP (TE).
2. Put the set into STOP condition in service mode (See page 5).
3. Press the ▶II key 1 time.
4. Press the ▶▶I and I◀◀ keys to move the optical pick-up block to the center.
5. Set the disc (YEDS-18).
6. Press the ▶II key 2 times.
   It will go from focus search to focus on, and CLV pull-in mode state. Tracking and sled are OFF.
7. Confirm that the waveform on oscilloscope is vertically symmetric against 0V.

Note : Take sweep time as long as possible to obtain best waveform.



8. Press the ■ key.
9. After check, release service mode (see page 7).

【MAIN BOARD】 (COMPONENT SIDE)

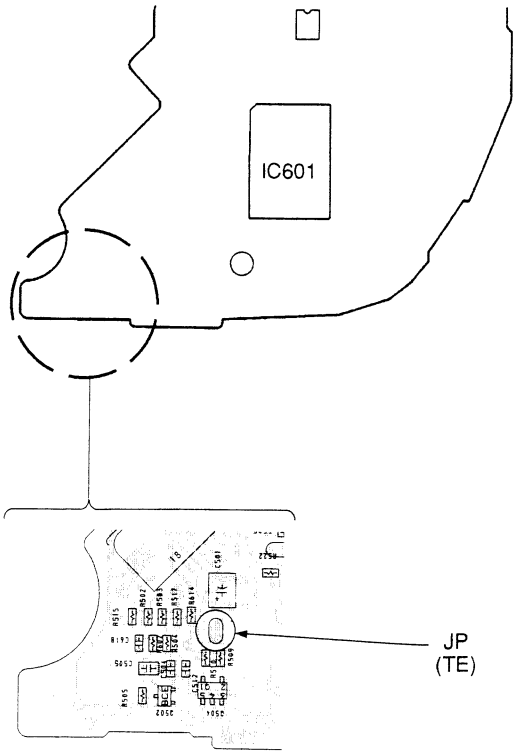


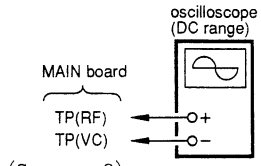
Fig. 10 Tracking Balance Check Location

Focus Bias Check

Conditions :

The set should be placed either horizontally

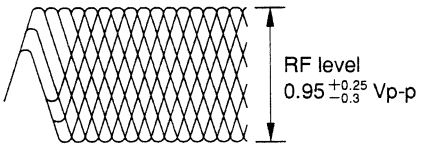
Check Procedure :



(See page 8)

1. Put the set into STOP condition in service mode (See page 5).
2. Connect a oscilloscope to MAIN board TP (RF).
3. Press the ▶II key 1 time.
4. Press the ▶▶I and I◀◀ keys to move the optical pick-up block to the center. (Move the optical pick-up block to the music area on the disc to enable easy visibility of the eye pattern).
5. Set the disc (YEDS-18).
6. Press the ▶II key 2 times.
   (It will go from focus search to focus on, and CLV pull-in mode state. Tracking and sled are OFF.)
7. Press the PLAY MODE button (Tracking and sled go ON.)
8. Confirm that clear eye patterns of waveform are generated on the oscilloscope. A good eye pattern means that the diamond shape (◇) in the center of the waveform can be clearly distinguished.

   · RF Signal Reference Waveform (eye pattern)
   VOLT/DIV : 200mV
   TIME/DIV : 500nS



   When observing the eye pattern, set the oscilloscope for AC range and raise vertical sensitivity.

9. After check, release service mode (See page 7).

Check Location : MAIN board (COMPONENT SIDE)

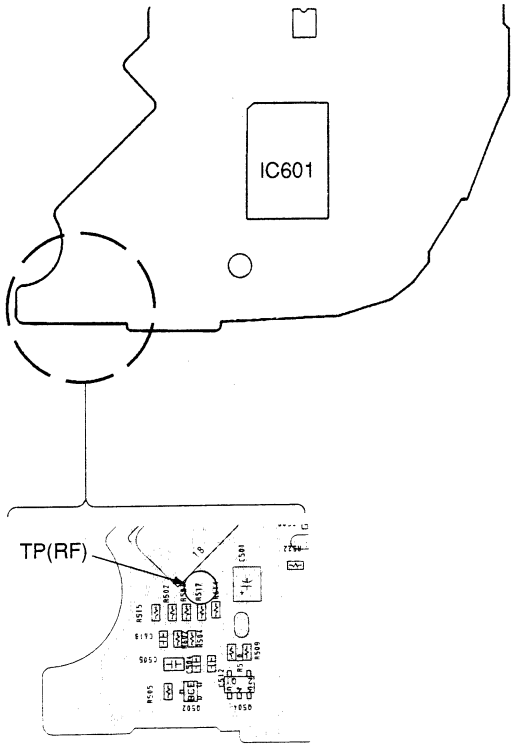


Fig. 11 Focus Bias Check Location

SECTION4
DIAGRAMS

4-1. IC PIN FUNCTION DESCRIPTION

·IC801 CXP83916-603Q SYSTEM CONTROL IC

Pin No.	Name	I/O	Description
1	WP	I	System stop status reset signal. Stop status is reset at falling edge of input signal.
2	OPEN	I	Door switch signal. Stop status is reset at rising edge of input signal. "H" : OPEN, "L" : CLOSE
3	RMC	I	Infrared remote control signal
4	VCCADJ	O	PWM output for servo power supply adjustment. Approx. 2kHz
5	BEEP	O	Pulse signal output at BEEP sound
6	SENS	I	Input pin of CXD2515Q SENS signal output
7	SCLK	O	Clock signal output for CXD2515Q SENS serial data reading
8	SCKO	O	Serial clock to RF5C241
9	SDTI	I	Serial data input from RF5C241
10	SDTO	O	Serial data to RF5C241
11	SQCK	O	Clock output pin for input of SUB-Q signal from CXD2515Q
12	SUBQ	I	SUB-Q signal input from CXD2515Q
14	X2511LT	O	Latch signal output at serial data transfer to RF5C241
15	XLDON	O	Laser diode control output. "L" : ON, "H" : OFF
16	MIRR	I	Input pin of CXD2515Q MIRR signal output
17	XSOE	O	Serial data output enable signal for RF5C241
18	TEST	I	Test mode selected by input of "L" level at the system reset
19	ESP	O	ESP status signal output. "H: ESP ON, "L" : ESP OFF
20	XRST	O	RESET signal output to CXD2515Q, RF5C241 and SM5853BF. Each IC is reset by output of "L" level.
21	PCON	O	Power supply control signal. "L" : POWER ON, "H" : POWER OFF
22	XRSM	I	RESUME switch input. "L" : RESUME ON, "H" : RESUME OFF
23	XHOLD	I	HOLD switch input. "L" : HOLD ON, "H" : HOLD OFF (reset)
24	XDCIN	I	DC-IN detection signal input. "L" : DC-IN detected, "H" : DC-IN not detected
25	XDM1	I	Battery (BP-DM10) connection detect switch input. "L" : Battery connected, "H" : Battery not connected
26	XORG	I	Control signal input at DSPILM and SRRILM. "L" : AMBER, "H" : GREEN
27	XESP	I	ESP switch input. "L" : ESP ON, "H" : ESP OFF
28	XCHG	O	Battery (BP-DM10) charge control signal output. "L" : Charge
29	RMDTO	O	Serial data output to LCD remote controller
30	AGSL	I	A/D input for CXD2515Q auto gain control setting
31	TCXSL	I	A/D input for model setting
32	VCCSEL	I	A/D input for servo system power supply voltage setting
33	CHGMNT	I	A/D input for battery (BP-DM10) charge voltage detection
34	BATTMNT	I	A/D input for voltage detection of battery (BP-DM10/AM-3) and external power supply
35	VCCMNT	I	A/D input for servo system power supply voltage detection
36	RMKEY	I	A/D input of FR, FF, PLAY/PAUSE, DSP and STOP switches on headphone remote controller
37	KEY	I	A/D input of PLAY/PAUSE, STOP, FF, FR, REPEAT/ENTER, PLAY MODE, DSP, ESP and SURROUND switches
38	XMCRST	I	System reset signal. System is reset by input of "L" level.
39 40	XLTI1 XLTO1	–	Connection of clock oscillating circuit 4.19MHz

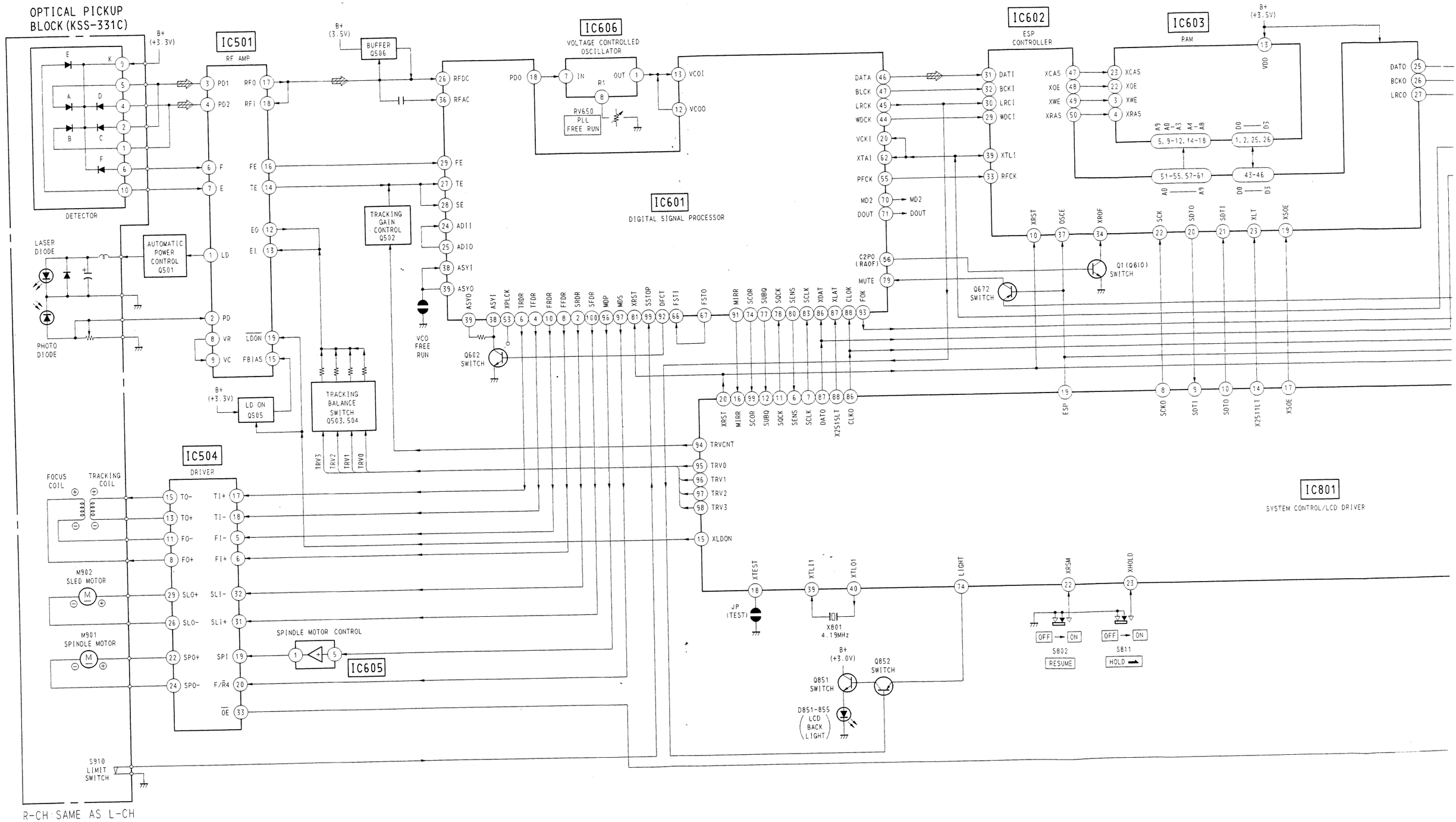
Pin No.	Name	I/O	Description
41	VSS	–	Ground
43	XLTI2	–	Not used (ground)
44	AVREF	–	Reference voltage input for A/D converter
45	AVSS	–	Ground of A/D converter
46	VL	O	Control signal to cut off the current flowing into external LCD bias resistor at standby
47 | 49	VLC3 | VLC1	–	LCD bias power supply voltages
50 | 53	COM0 | COM3	O	LCD remote control signals
54 | 73	S00 | S19	O	LCD segment signals
74	LIGHT	O	Backlight control signal. "H" : ON
82	AMUT	O	Mute control signal. "H" : Mute
83	DMUT	O	SM5853BF mute control signal. "H" : Mute
85	XAULT	O	Latch signal output at serial data transfer to SM5853BF
86	CLKO	O	Serial clock to CXD2515Q and SM5853BF
87	DATO	O	Serial data to CXD2515Q and SM5853BF
88	X2515LT	O	Latch signal output at serial data transfer to CXD2515Q
89	VDD	–	Power supply
90	NC	–	Not used (connect to VDD)
91	VSS	–	Ground
93	TEX	–	Not used (ground)
94	TRVCNT	O	LPF switch for tracking balance adjustment. "H" : LPF ON
95 | 98	TRV0 | TRV3	O	Resistor selection switch for tracking balance adjustment. "H" : Select
99	SCOR	I	Input pin of CXD2515Q SCOR signal output
100	RMCKI	I	Input of clock signal (for data output) from LCD remote controller. Data is updated by detection of falling edge.

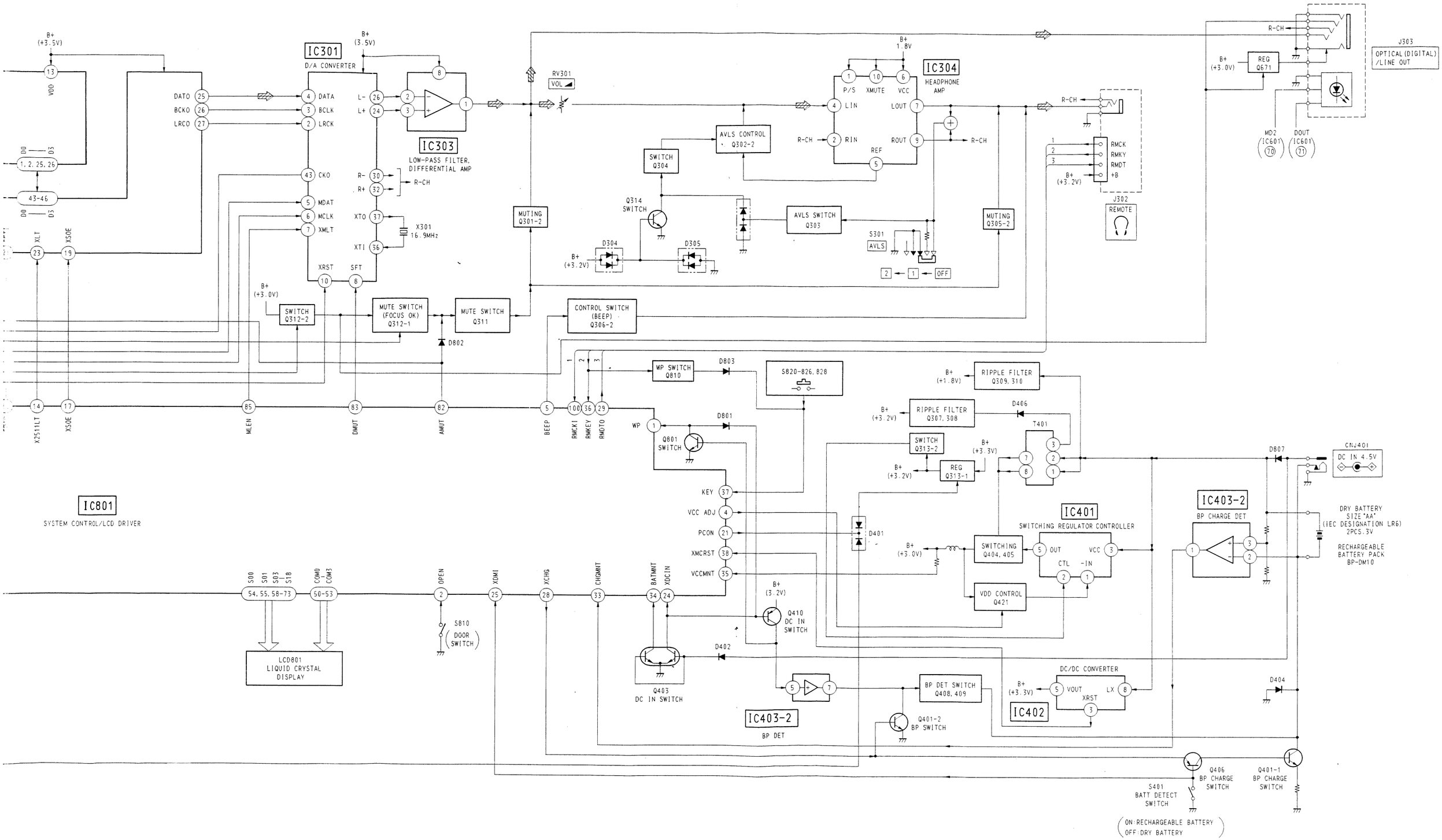
·IC602 RF5C241 ESP CONTROL IC

Pin No.	Name	I/O	Description
1	CHDT	O	Data compare mode moniter signal. "H" : data compare
2	AM19	—	Not used
3	AM18	—	Not used
4	AM17	—	Not used
5	AM16	—	Not used
6	AM15	—	Not used
7	TEST	I	Not used (ground)
8	Vss	—	Grund. "L" : Parallel "H" : Serial
9	SPSL	I	Serial/Parallel select signal of CPU input data. "L" : Parallel
10	XRST	I	Reset signal. "L" : Reset
11	XHLT	I	Not used (ground)
12	DTSL	I	DA data output select signal. "L" : Data through
13	CHM0	I	Data compare mode 0
14	CHM1	I	Data compare mode 1
15	WDSL	I	Data compare area designate signal
16	XWRE	I	DRAM write enable signal
17	XRDE	I	DRAM read enable signal
18	XQOK	I	Subcode QOK input
19	XSOE	I	CPU serial data output enable signal
20	SDTO	I	CPU serial data output
21	SDTI	I	CPU serial data input
22	SCK	I	CPU serial interface clock
23	XLT	I	CPU serial data input latch signal."L" : Latch
24	VDD	—	Power supply (+5V)
25	DATO	O	DA data output
26	BCKO	O	BCK output
27	LRCO	O	LRCK output
28	WDCO	O	WDCK output
29	WDCI	I	WDCK input
30	LRCI	I	LRCK input
31	DATI	I	DA data input
32	BCKI	I	BCK input
33	RFCK	I	RFCK input
34	XROI	I	RAM overflow input signal at DSP
35	MCK	—	Not used
36	———	—	Not used
37	OSCE	I	X' tal vibrator enable signal. "H" or Open : Enable
38	XTLO	—	Not used
39	XTLI	I	X' tal vibrator input (16.9344MHz)
40	Vss	—	Ground
41	C176	O	176.4kHz output
42	MCSL	I	Internal clock select signal. "L" : 8.4672MHz "H" or Open : 16.9344MHz
43	D0	I/O	DRAM data bus 0
44	D1	I/O	DRAM data bus 1
45	D2	I/O	DRAM data bus 2
46	D3	I/O	DRAM data bus 3

Pin No.	Name	I/O	Description
47	XCAS	O	DRAM column address stlobe signal
48	XOE	O	DRAM data output enable signal
49	XWE	O	DRAM data input enable signal
50	XRAS	O	DRAM row address stlobe signal
51	A9	O	DRAM address bus 9
52	A0	O	DRAM address bus 0
53	A1	O	DRAM address bus 1
54	A2	O	DRAM address bus 2
55	A3	O	DRAM address bus 3
56	V_{DD}	—	Power supply (5 V)
57	A8	O	DRAM address bus 8
58	A7	O	DRAM address bus 7
59	A6	O	DRAM address bus 6
60	A5	O	DRAM address bus 5
61	A4	O	DRAM address bus 4
62	———	—	Not used
63	XWIH	O	DRAM write inhibit signal
64	XEMP	O	DRAM read inhibit signal

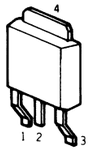
4-2. BLOCK DAIGRAM




IC801
SYSTEM CONTROL/LCD DRIVER
IC301
D/A CONVERTER
IC303
LOW-PASS FILTER, DIFFERENTIAL AMP
IC304
HEADPHONE AMP
IC401
SWITCHING REGULATOR CONTROLLER
IC402
IC403-2
BP CHARGE DET
IC403-2
BP DET
B+ (+3.5V)
B+ (3.5V)
B+ (+3.0V)
B+ (+3.2V)
B+ (+3.2V)
B+ (+1.8V)
B+ 1.8V
B+ (+3.0V)
B+ (+3.3V)
B+ (+3.2V)
B+ (+3.2V)
B+ (3.2V)
B+ (+3.3V)
VDD
DATO
BCKO
LRCO
DATA
BCLK
LRCK
CKO
MDAT
MCLK
XMLT
XRST
SFT
L-
L+
R-
R+
XTO
XTI
X301 16.9MHz
R-CH
RV301 VOL
MUTING Q301-2
SWITCH Q304
AVLS CONTROL Q302-2
Q314 SWITCH
AVLS SWITCH Q303
D304
D305
S301 AVLS
2 1 OFF
MUTING Q305-2
P/S
XMUTE
VCC
LIN
RIN
REF
LOUT
ROUT
R-CH
J302 REMOTE
RMCK
RMKY
RMDT
+B
J303 OPTICAL (DIGITAL) /LINE OUT
REG Q671
MD2 (IC601 (70))
DOUT (IC601 (71))
SWITCH Q312-2
MUTE SWITCH (FOCUS OK) Q312-1
MUTE SWITCH Q311
D802
CONTROL SWITCH (BEEP) Q306-2
WP SWITCH Q810
D803
S820-826, 828
RIPPLE FILTER Q309, 310
RIPPLE FILTER Q307, 308
D406
T401
SWITCH Q313-2
REG Q313-1
D801
Q801 SWITCH
D807
CNJ401 DC IN 4.5V
DRY BATTERY SIZE "AA" (IEC DESIGNATION LR6) 2PCS. 3V
RECHARGEABLE BATTERY PACK BP-DM10
D401
SWITCHING Q404, 405
VDD CONTROL Q421
OUT
VCC
CTL
-IN
D404
DC/DC CONVERTER
VOUT
LX
XRST
BP DET SWITCH Q408, 409
Q401-2 BP SWITCH
Q410 DC IN SWITCH
D402
Q403 DC IN SWITCH
S810 (DOOR SWITCH)
LCD801 LIQUID CRYSTAL DISPLAY
S00
S01
S03 – S18
COM0 – COM3
S4, 55, 58–73
50–53
OPEN
XDM1
XCHG
CHGMNT
BATMNT
XDCIN
KEY
VCC ADJ
PCON
XMCRST
VCCMNT
WP
BEEP
RMCK1
RMKEY
RMDTO
MLEN
DMUT
AMUT
X2511LT
XSOE
XSOE
XLT
VDD
D0 – D3
1, 2, 25, 26
43–46
S401 BATT DETECT SWITCH
(ON: RECHARGEABLE BATTERY
OFF: DRY BATTERY)
Q406 BP CHARGE SWITCH
Q401-1 BP CHARGE SWITCH

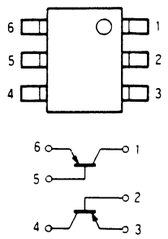
4-3. SEMICONDUCTOR LEAD LAYOUTS

2SD1758F5-QR

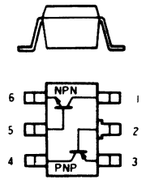


1 BASE
2 COLLECTOR
3 EMITTER
4 COLLECTOR

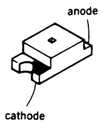
XN4404



IMD2
XN4601

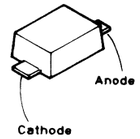


CL-150Y-CD

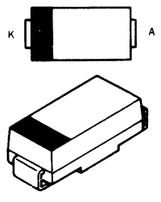


XN4112

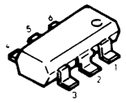
MA8068



SFPB-52V



XN4212
XN4504



• **Semiconductor Location**

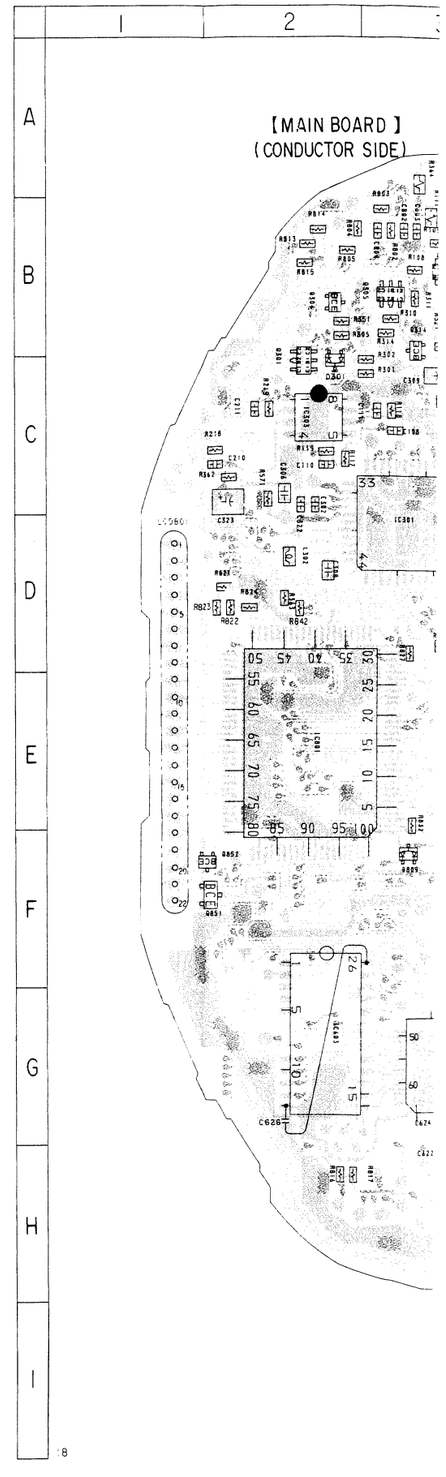
Ref. No.	Location	Ref. No.	Location
D301	C-2	Q1	I-14
D302	C-13	Q301	C-2
D303	C-3	Q302	B-4
D304	D-13	Q303	C-14
D305	C-13	Q304	B-2
D401	D-4	Q305	B-3
D402	C-5	Q306	B-3
D403	C-4	Q307	C-4
D404	C-5	Q308	C-3
D405	C-13	Q309	B-3
D406	C-5	Q310	B-13
D501	E-3	Q311	C-13
D802	D-3	Q312	D-3
D803	E-14	Q313	D-4
D805	A-4	Q314	B-3
D807	C-12	Q401	D-5
D809	F-3	Q403	C-11
D851	D-15	Q404	C-4
D852	D-15	Q405	B-4
D853	E-15	Q406	D-5
D854	E-15	Q408	B-5
D855	F-15	Q409	B-5
		Q410	D-13
IC301	D-3	Q421	C-4
IC302	B-4	Q501	H-6
IC303	C-2	Q502	H-11
IC401	C-5	Q503	H-5
IC402	C-12	Q504	H-12
IC403	C-5	Q505	G-12
IC501	G-5	Q506	H-13
IC504	F-4	Q602	G-4
IC601	G-13	Q671	H-4
IC602	G-3	Q672	F-14
IC603	G-2	Q801	E-4
IC605	E-14	Q810	E-14
IC606	G-4	Q851	F-2
IC801	E-2	Q852	F-2

Note:

- ○—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.
- ⊗ : Through hole.
- ▒ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution :	
Pattern face side : (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side : (Component Side)	Parts on the parts face side seen from the parts face are indicated.



4-4. PRINTED WIRING BOARDS —MAIN BOARD SUFFIX-11 MODEL—

See page 21 for Semiconductor Lead Layouts.

【MAIN BOARD】
(CONDUCTOR SIDE)

J302
REMOTE

RV301
VOL

DRY BATTERY
SIZE "AA"
(IEC DESIGNATION LR6)
2PCS 3V

RECHARGEABLE
BATTERY PACK
BP-DM10

S902
RESUME
OFF → ON

J303
OPTICAL (DIGITAL)
LINE OUT

1-648-945-

【JACK BOARD】
(CONDUCTOR SIDE)

CN2401
DC IN 4.5V

1-168-946-

【JACK BOARD】
(COMPONENT SIDE)

1-168-946-

S910
LIMIT SWITCH

M902
SLED MOTOR

OPTICAL PICK-UP BLOCK
KSM-331CAN(S)
(KSS-331C)

M901
SPINDLE MOTOR

【MAIN BOARD】
(COMPONENT SIDE)

S822
S820
S821
S823
S824
S827
S828
S826
S825
PLAY MODE
S811
HOLD
S810
DOOR SWITCH
S530
4VLS
OFF

1-649-945-

【TS BOARD】

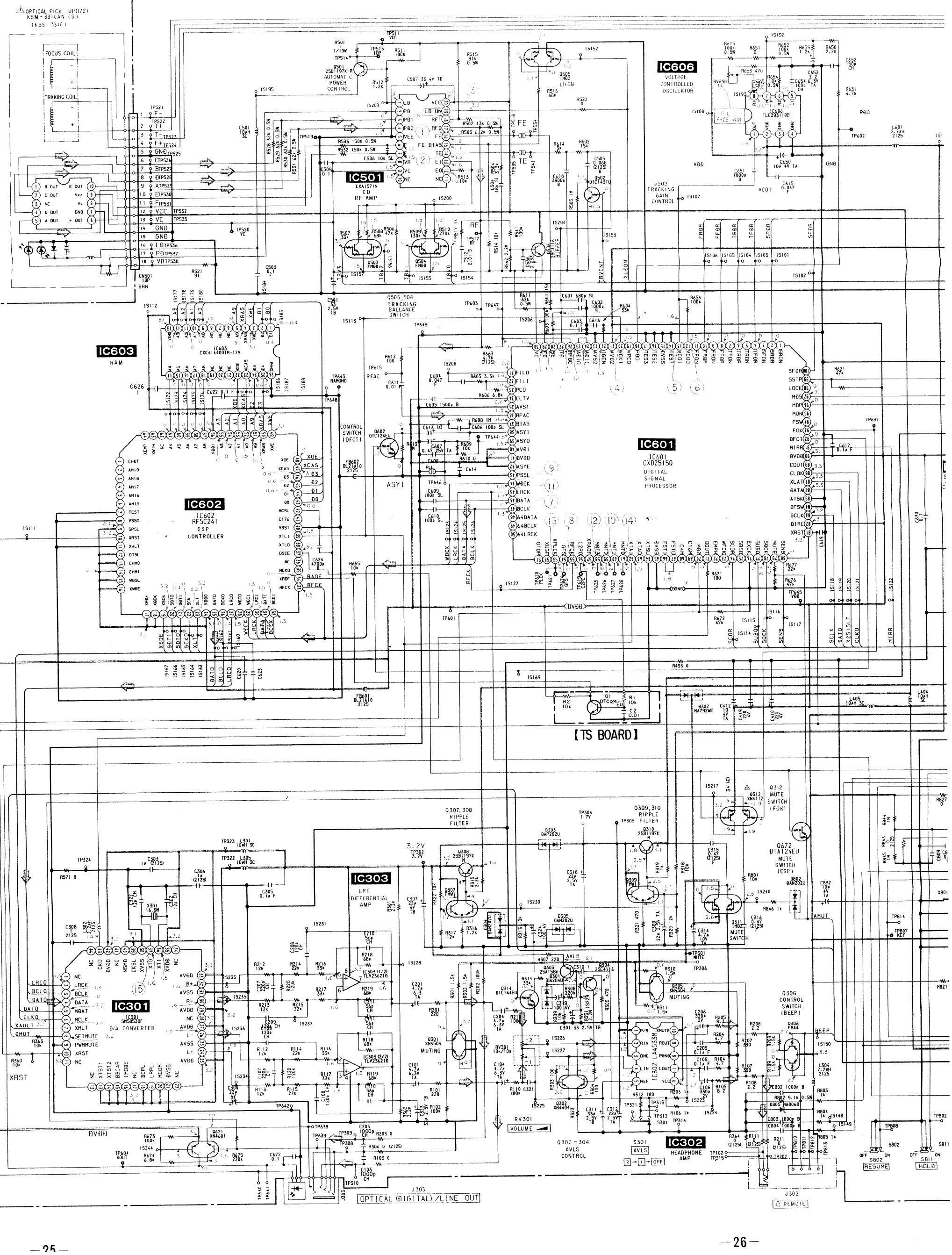
1-649-681-

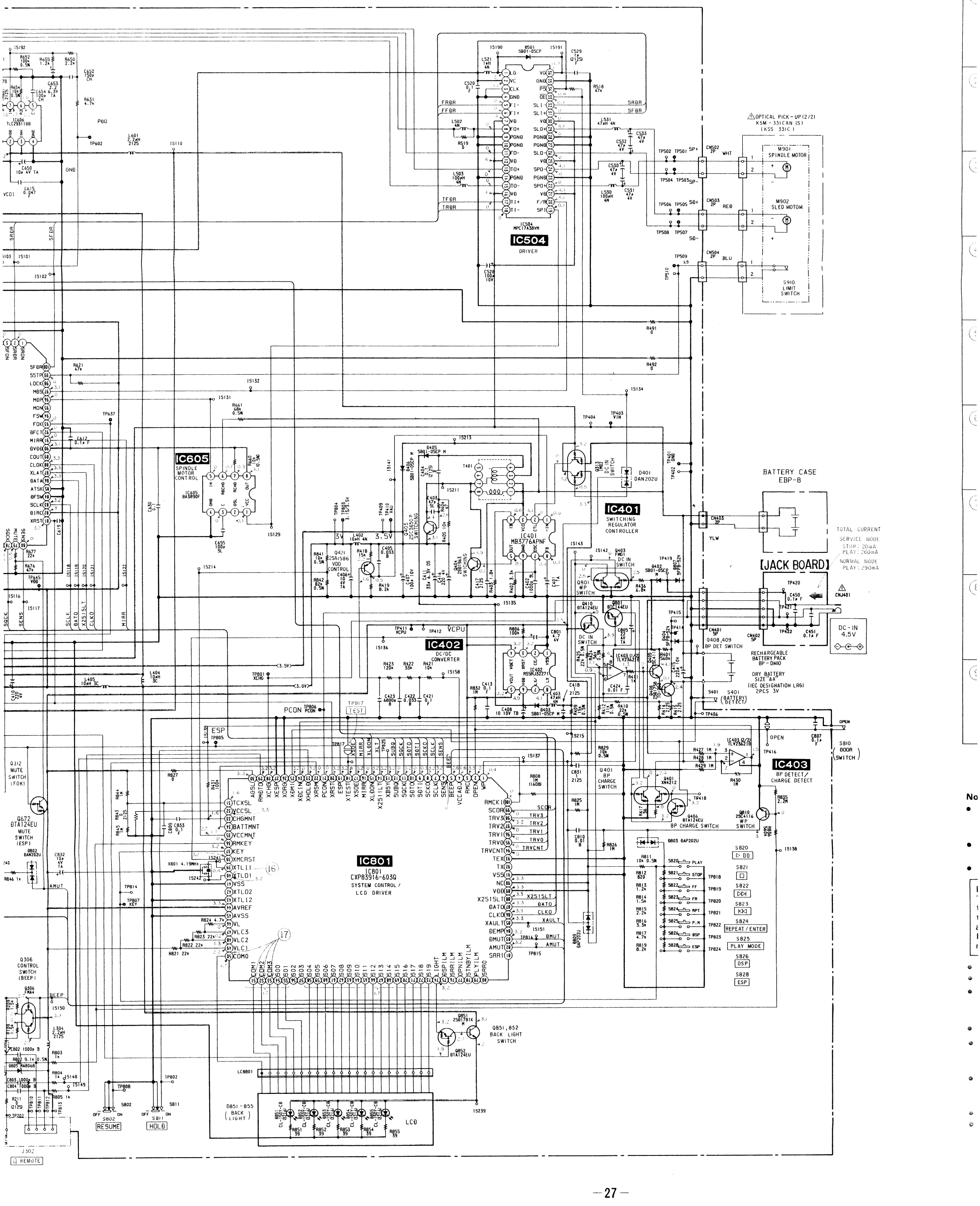
5. SCHEMATIC DIAGRAM —MAIN BOARD SUFFIX-11 MODEL—

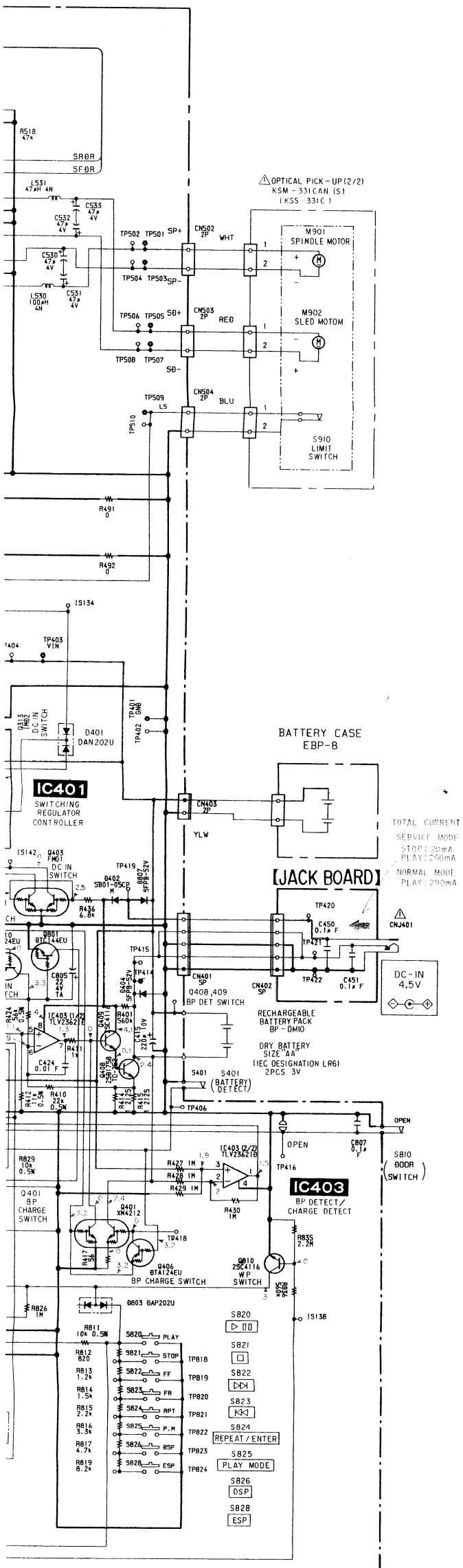
See page 36 for IC Bolck Diagrams.

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13

【MAIN BOARD】




12
13
14
15
16
17
18
19
20
21
22
23
IC504
DRIVER
IC605
SPINDLE MOTOR CONTROL
IC401
SWITCHING REGULATOR CONTROLLER
IC402
DC/DC CONVERTER
IC403
BP DETECT/ CHARGE DETECT
IC801
SYSTEM CONTROL / LCD DRIVER
OPTICAL PICK-UP(2/2)
KSM-331CAN(S)
(KSS-331C)
M901
SPINDLE MOTOR
M902
SLED MOTOM
S910
LIMIT SWITCH
BATTERY CASE
EBP-8
[JACK BOARD]
TOTAL CURRENT
SERVICE MODE
STOP: 20mA
PLAY: 260mA
NORMAL MODE
PLAY: 290mA
DC-IN
4.5V
RECHARGEABLE
BATTERY PACK
BP-DM10
DRY BATTERY
SIZE "AA"
(IEC DESIGNATION LR6)
2PCS 3V
S401
(BATTERY)
DETECT
S810
DOOR
SWITCH
Q401
BP
CHARGE
SWITCH
Q306
CONTROL
SWITCH
(BEEP)
Q312
MUTE
SWITCH
(FOK)
Q672
MUTE
SWITCH
(ESP)
Q851,852
BACK LIGHT
SWITCH
D851-855
(BACK
LIGHT)
LCD
RESUME
HOLD
REMOTE
PBO
VCO1
GND
VCPU
PCON
ESP
TEST
AMUT
SFDR
SRDR
FFDR
FRDR
TFDR
TRDR
SFDN
SRDN
SFDR
SSTP
LOCK
MDS
MDP
MDN
FSW
FOK
DFCT
MIRR
DVDD
COUT
CLOK
XLAT
DATA
ATSK
DFSW
SCLK
DIRC
XRST
SOCK
SENS
MUTE
SCLK
DATO
X2515LT
CLKO
MIRR
BEEP
VDD
KEY
TOTAL CURRENT
SERVICE MODE
STOP: 20mA
PLAY: 260mA
NORMAL MODE
PLAY: 290mA



(1) 0V
APPROX. 250mVp-p
IC501 (16) FE

(2) 0V
APPROX. 600mVp-p
IC501 (14) TE

(3) 0.8Vp-p
IC501 (17) RFO

(4) 2.9Vp-p
0.06μsec
IC601 (20) VCKI

(5) 4.3Vp-p
0.1μsec
IC601 (13) VCOI

(6) 3.1Vp-p
0.1μsec
IC601 (12) VCOO

(7) 3.1Vp-p
0.48μsec
IC601 (47) BLCK

(8) 3.1Vp-p
130μsec
IC601 (55) RFCK

(9) 3.1Vp-p
11.2μsec
IC601 (44) WDCK

(10) 3.1Vp-p
135μsec
IC601 (59) MNT2, (60) MNT1

(11) 3.1Vp-p
22μsec
IC601 (45) LRCK

(12) 3.1Vp-p
130μsec
IC601 (58) MNT3

(13) 3.1Vp-p
0.2μsec
IC601 (53) XPLCK

(14) 3.1Vp-p
135μsec
IC601 (61) MNTO

(15) 2.6Vp-p
16.9MHz
IC301 (36) XTI

(16) 2.9Vp-p
4.19MHz
IC801 (40) XTLOI

(17) 1Vp-p
1.9msec
IC801 (50) COMO - (53) COM3

Note:

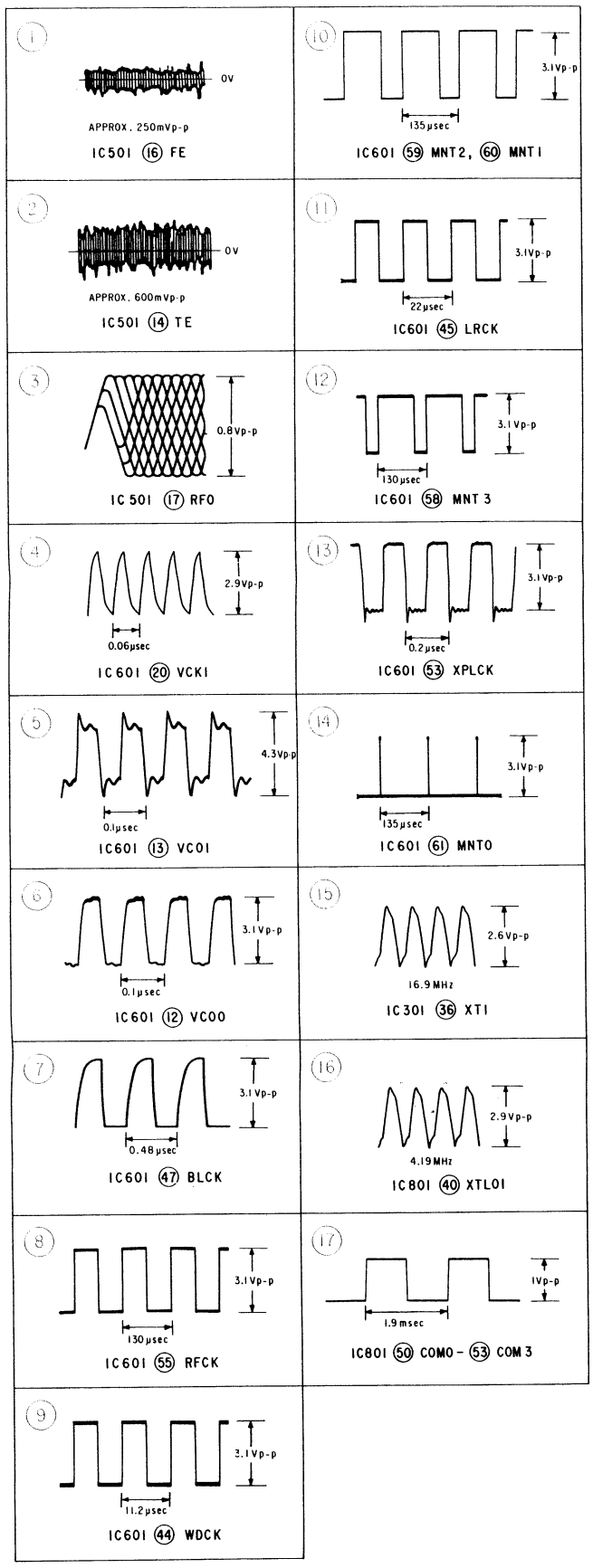
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

- ▬▬ : B+ Line
- ▭ : adjustment for repair.
- Power voltage is dc 4.5V and fed with regulated dc power supply from external power voltage jack.
  no mark : PLAY (SERVICE MODE)
- Voltage and waveforms are dc with respect to ground.
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD

4-6. SCHEMATIC DIAGRAM —MAIN BOARD SUFFIX-13 MODEL—

See page 36 for IC Bolck Diagra

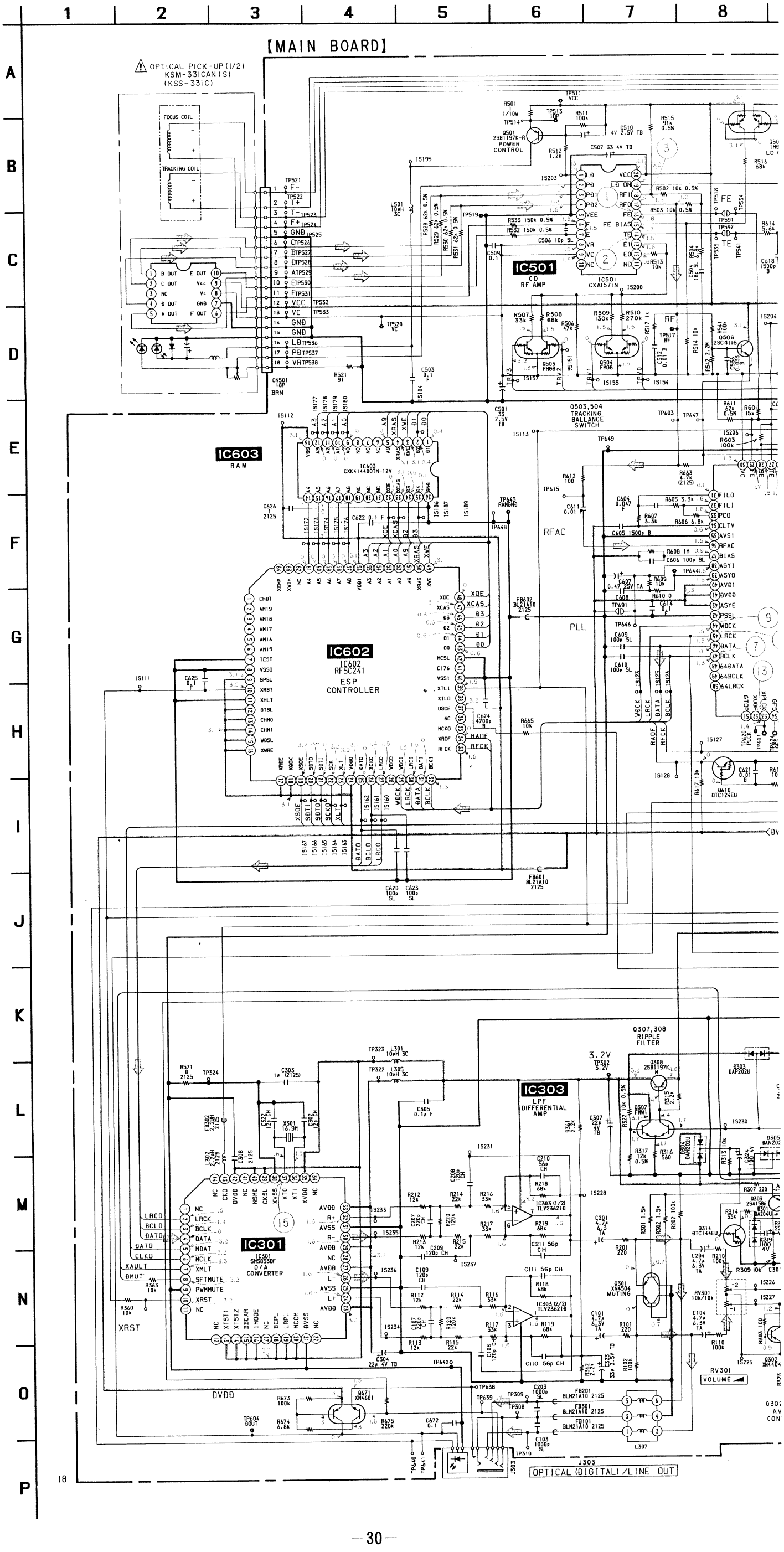

1 IC501 (16) FE — APPROX. 250mVp-p
2 IC501 (14) TE — APPROX. 600mVp-p
3 IC 501 (17) RFO — 0.8Vp-p
4 IC601 (20) VCKI — 0.06µsec
5 IC601 (13) VCOI — 4.3Vp-p, 0.1µsec
6 IC601 (12) VCOO — 3.1Vp-p, 0.1µsec
7 IC601 (47) BLCK — 3.1Vp-p, 0.48µsec
8 IC601 (55) RFCK — 3.1Vp-p, 130µsec
9 IC601 (44) WDCK — 3.1Vp-p, 11.2µsec
10 IC601 (59) MNT2, (60) MNT1 — 3.1Vp-p, 135µsec
11 IC601 (45) LRCK — 3.1Vp-p, 22µsec
12 IC601 (58) MNT 3 — 3.1Vp-p, 130µsec
13 IC601 (53) XPLCK — 3.1Vp-p, 0.2µsec
14 IC601 (61) MNTO — 3.1Vp-p, 135µsec
15 IC301 (36) XTI — 2.6Vp-p, 16.9MHz
16 IC801 (40) XTLOI — 2.9Vp-p, 4.19MHz
17 IC801 (50) COMO - (53) COM 3 — 1Vp-p, 1.9msec

Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

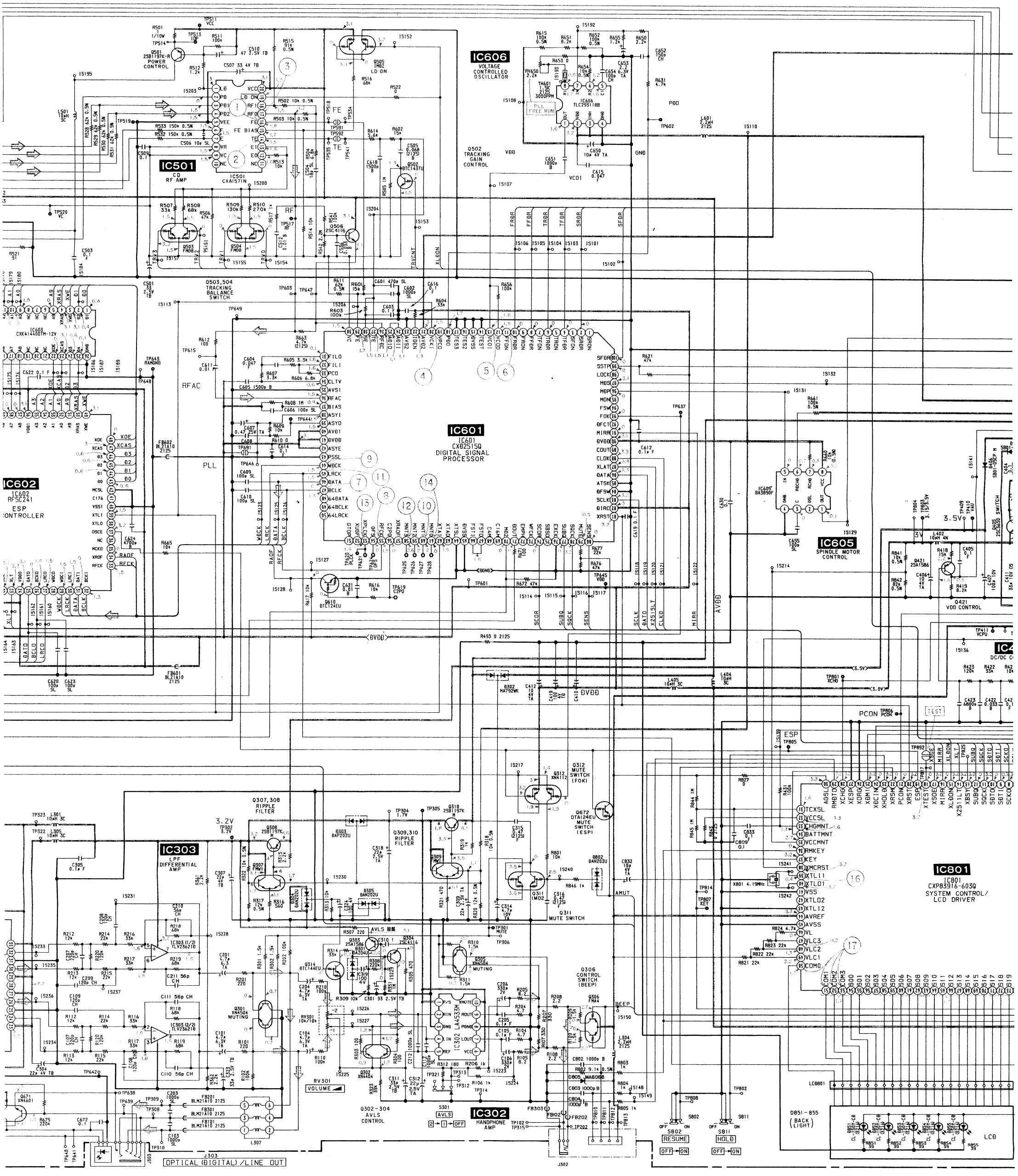
- ▬▬ : B+ Line
- ▭ : adjustment for repair.
- Power voltage is dc 4.5V and fed with regulated dc power supply from external power voltage jack.
  no mark: PLAY (SERVICE MODE)
- Voltage and waveforms are dc with respect to ground.
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD

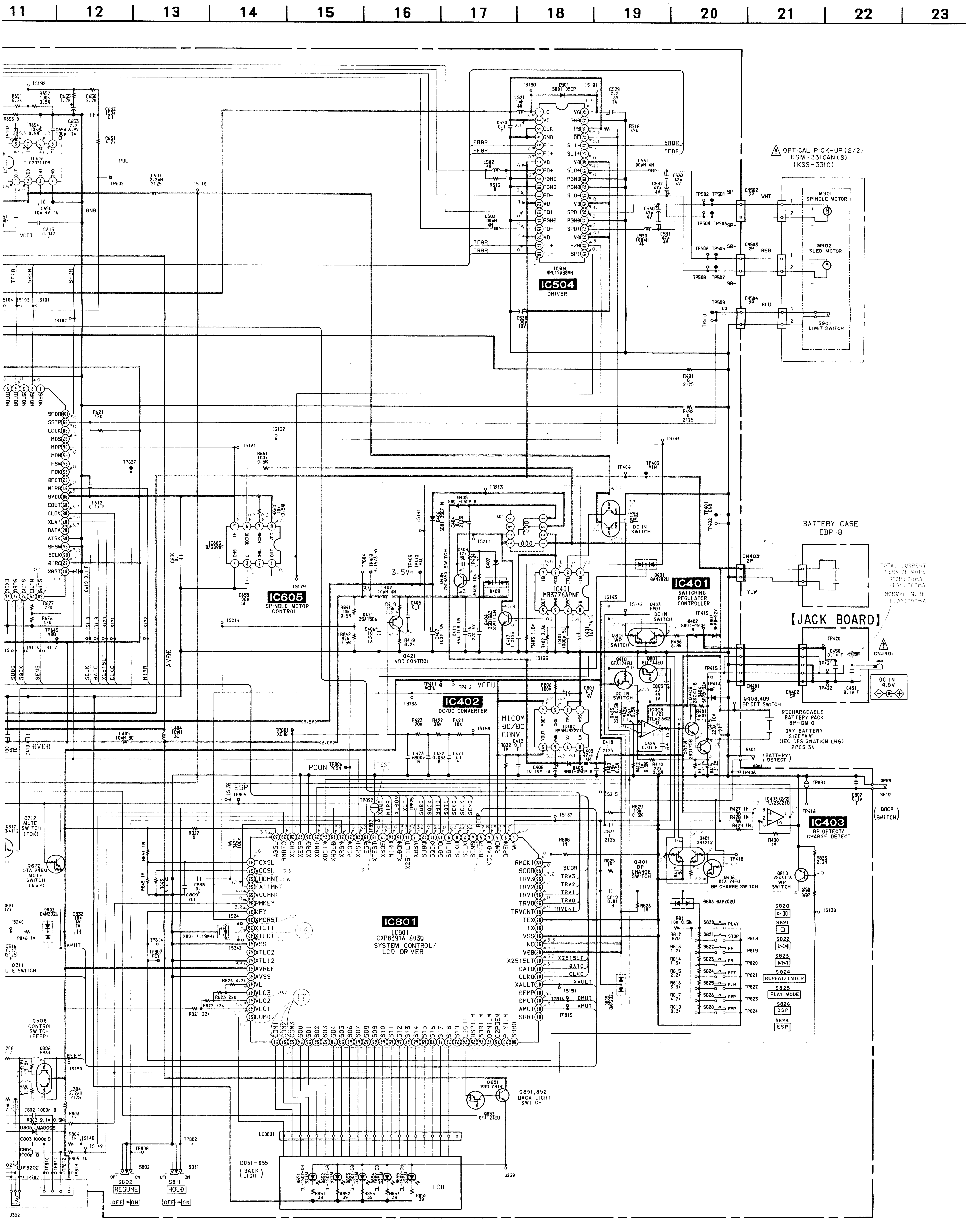


RD SUFFIX-13 MODEL— See page 36 for IC Bolck Diagrams.

4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16

BOARD]




11 12 13 14 15 16 17 18 19 20 21 22 23
OPTICAL PICK-UP (2/2)
KSM-331CAN(S)
(KSS-331C)
M901
SPINDLE MOTOR
M902
SLED MOTOR
S901
LIMIT SWITCH
CN502 2P WHT
CN503 2P RED
CN504 2P BLU
IC504
MPC17A38VM
IC504
DRIVER
IC606
TLC2931IDB
IC605
BA3890F
IC605
SPINDLE MOTOR CONTROL
IC401
MB3776APNF
IC401
SWITCHING REGULATOR CONTROLLER
IC402
RS5RJ3227I
IC402
DC/DC CONVERTER
MICOM DC/DC CONV
IC403
BP DETECT/ CHARGE DETECT
IC801
IC801
CXP83916-603Q
SYSTEM CONTROL/ LCD DRIVER
BATTERY CASE
EBP-8
TOTAL CURRENT
SERVICE MODE
STOP:20mA
PLAY:260mA
NORMAL MODE
PLAY:290mA
【JACK BOARD】
CNJ401
DC IN 4.5V
RECHARGEABLE BATTERY PACK
BP-DM10
DRY BATTERY
SIZE "AA"
(IEC DESIGNATION LR6)
2PCS 3V
S401 (BATTERY DETECT)
S810 (DOOR SWITCH)
Q421 VDD CONTROL
Q405 2SC3650 SWITCH
Q404 2SD1963 SWITCH
Q313 IMD2 DC IN SWITCH
Q403 FMG1 DC IN SWITCH
Q801 WP SWITCH
Q410 DTA124EU DC IN SWITCH
Q408,409 BP DET SWITCH
Q401 BP CHARGE SWITCH
Q406 DTA124EU BP CHARGE SWITCH
Q810 2SC4116 WP SWITCH
Q312 MUTE SWITCH (FOK)
Q672 DTA124EU MUTE SWITCH (ESP)
Q311 MUTE SWITCH
Q306 CONTROL SWITCH (BEEP)
Q851,852 BACK LIGHT SWITCH
X801 4.19MHz
S820 PLAY
S821 STOP
S822 FF
S823 FR
S824 REPEAT/ENTER
S825 PLAY MODE
S826 DSP
S828 ESP
S802 RESUME
S811 HOLD
OFF ON
D851 - 855 (BACK LIGHT)
LCD
LCD801
J302

PRINTED WIRING BOARDS —MAIN BOARD SUFFIX-13 MODEL—

See page 21 for Semiconductor Lead Layouts.

• **Semiconductor Location**

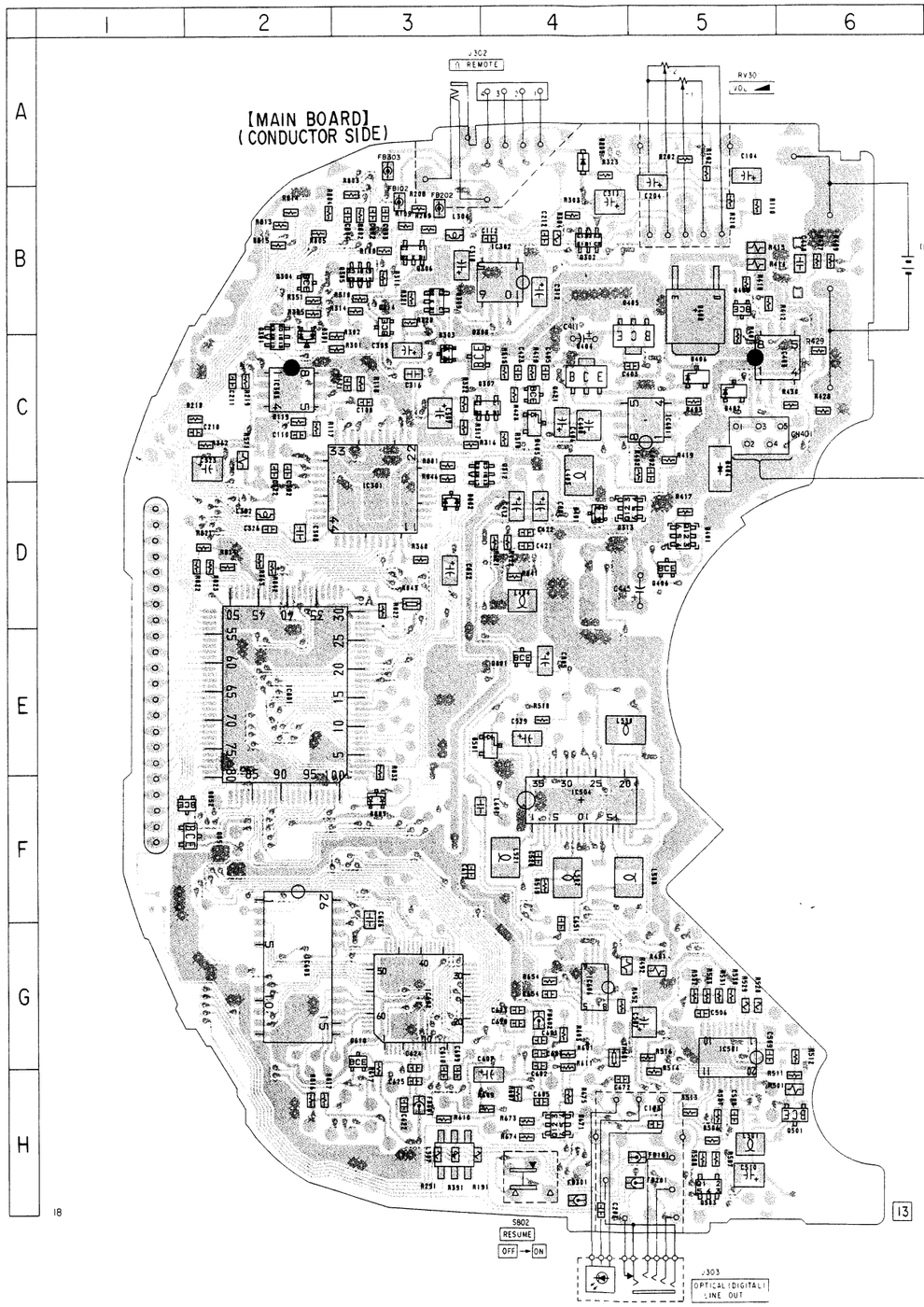
Ref. No.	Location	Ref. No.	Location
D301	C-2	Q301	C-2
D302	C-13	Q302	B-4
D303	C-3	Q303	C-14
D304	D-13	Q304	B-2
D305	C-13	Q305	B-3
D401	D-4	Q306	B-3
D402	C-5	Q307	C-4
D403	C-4	Q308	C-3
D404	C-5	Q309	B-3
D405	C-13	Q310	B-13
D406	C-5	Q311	C-13
D501	E-3	Q312	D-3
D802	D-3	Q313	D-4
D803	E-14	Q314	B-3
D805	A-4	Q401	D-5
D807	C-12	Q403	C-11
D809	F-3	Q404	C-4
D851	D-15	Q405	B-4
D852	D-15	Q406	D-5
D853	E-15	Q408	B-5
D854	E-15	Q409	B-5
D855	F-15	Q410	D-13
		Q421	C-4
IC301	D-3	Q501	H-6
IC302	B-4	Q502	H-11
IC303	C-2	Q503	H-5
IC401	C-5	Q504	H-12
IC402	C-12	Q505	G-12
IC403	C-5	Q506	H-13
IC501	G-5	Q610	G-3
IC504	F-4	Q671	H-4
IC601	G-13	Q672	F-14
IC602	G-3	Q801	E-4
IC603	G-2	Q810	E-14
IC605	E-14	Q851	F-2
IC606	G-4	Q852	F-2
IC801	E-2		

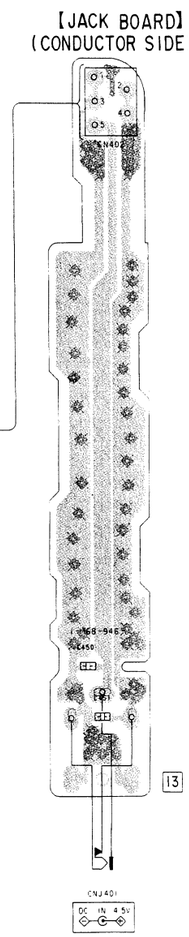
Note:

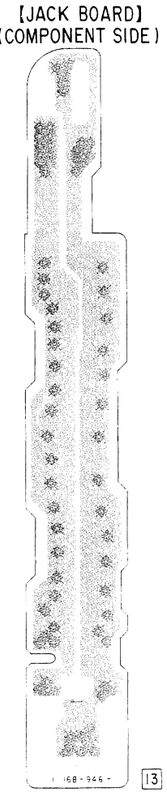
- ○—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.
- ◎ ◎ : Through hole.
- ▒▒ : Pattern from the side which enables seeing.

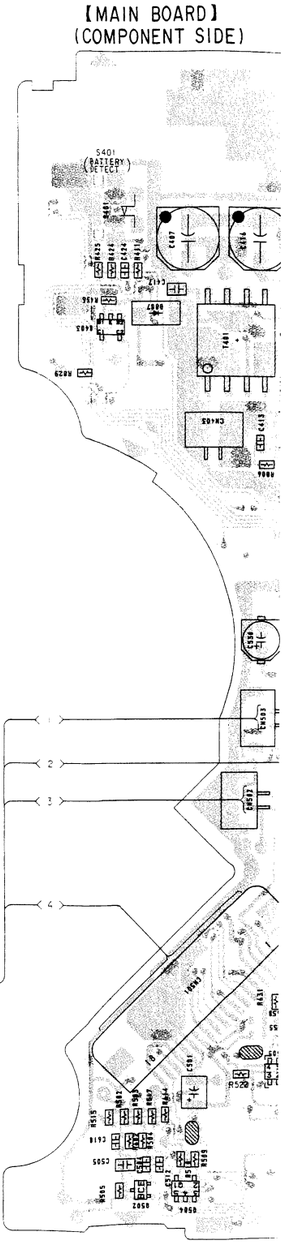
(The other layers' patterns are not indicated.)

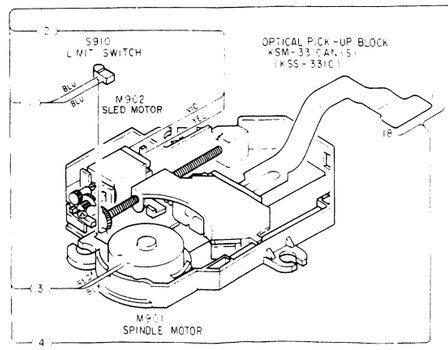
Caution :	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.



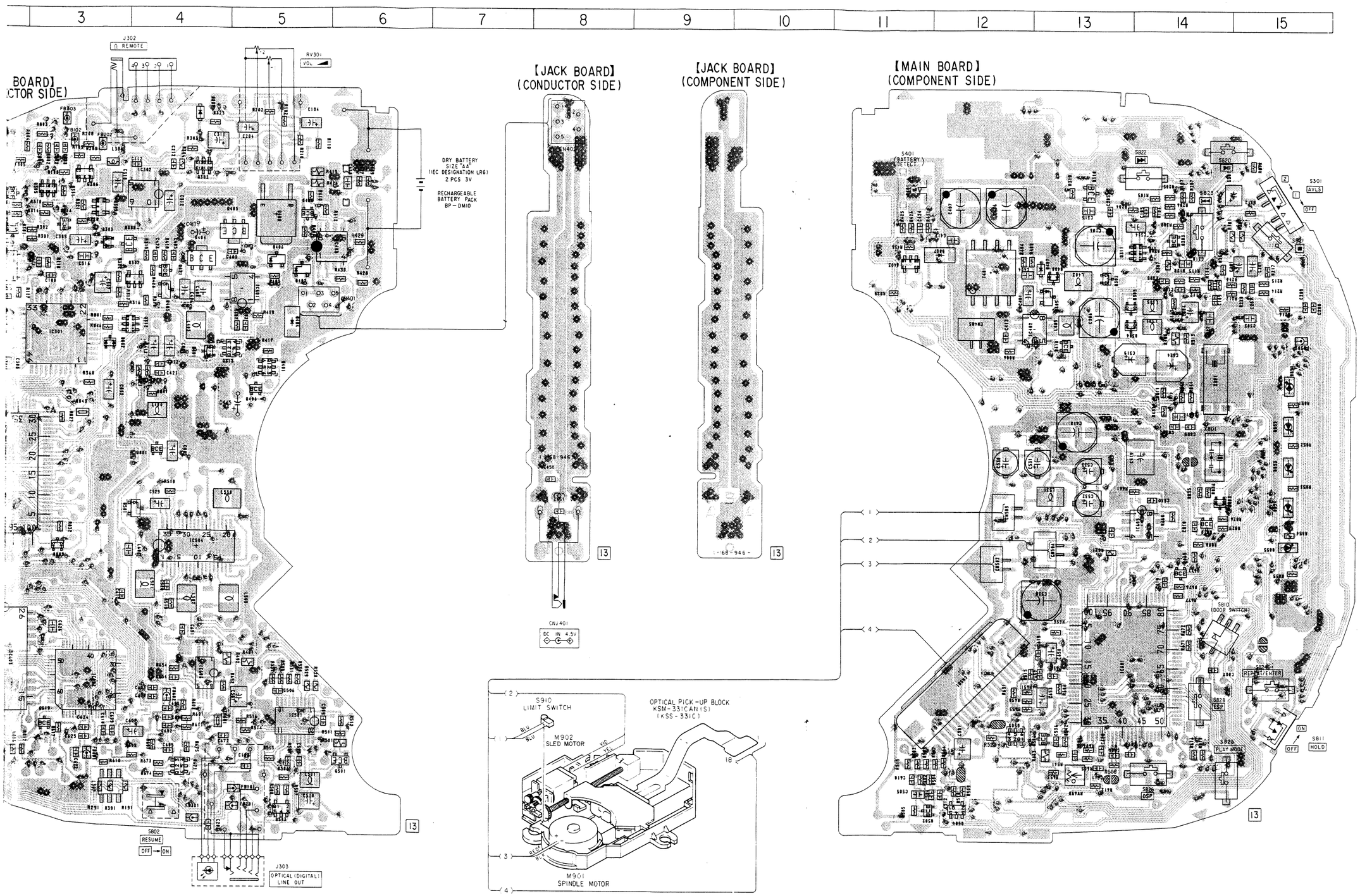






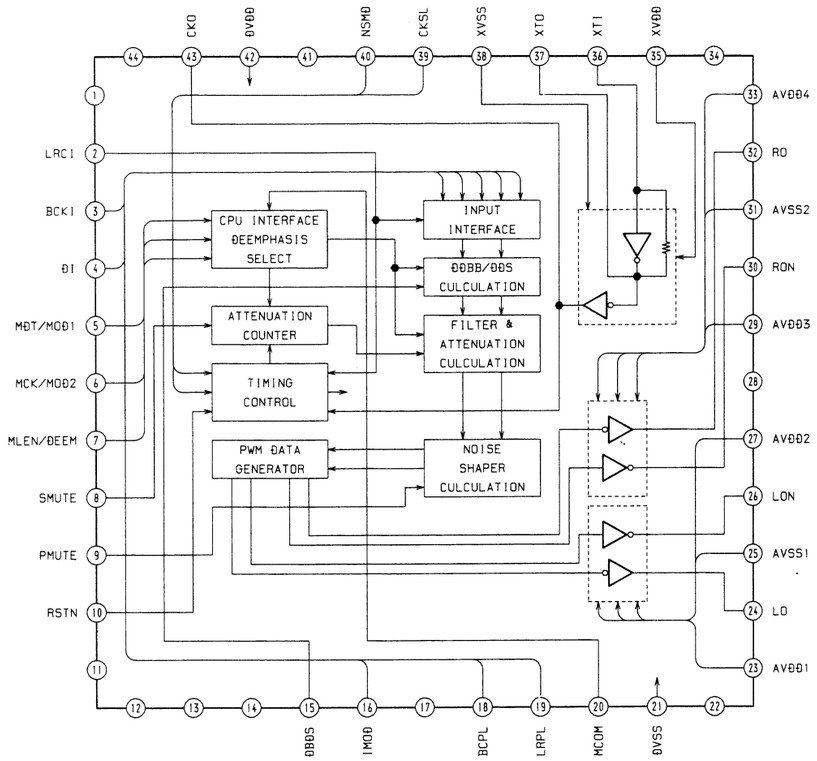


ARDS —MAIN BOARD SUFFIX-13 MODEL— **See page 21 for Semiconductor Lead Layouts.**

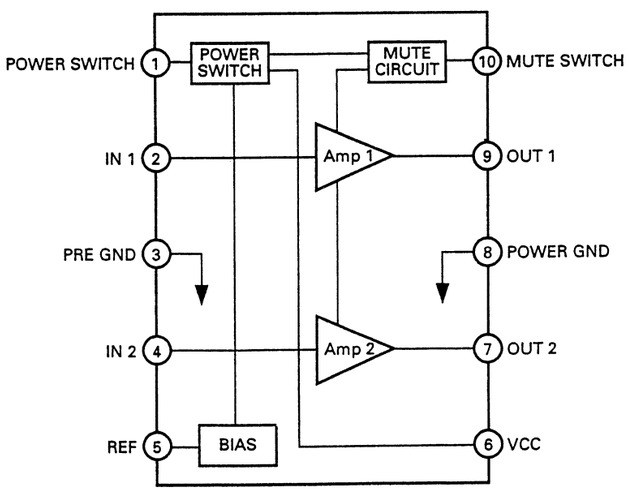


4-8. IC BLOCK DIAGRAMS

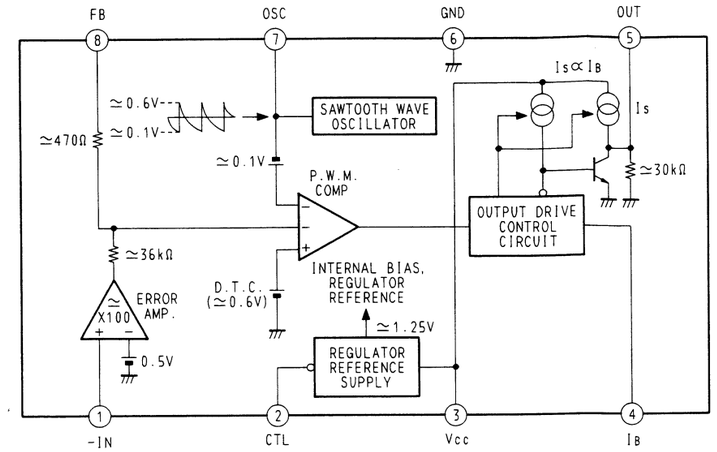
IC301 SM5853BF



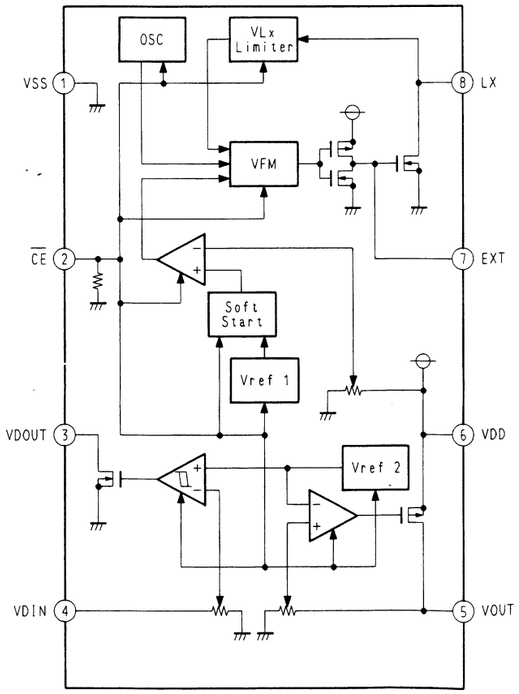
IC302 LA4533M



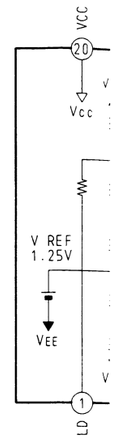
IC401 MB3776APNF-G-SNY-ER



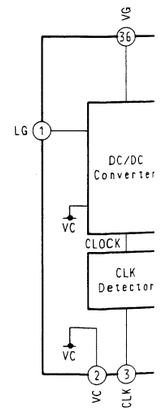
IC402 RS5RJ32271-T1



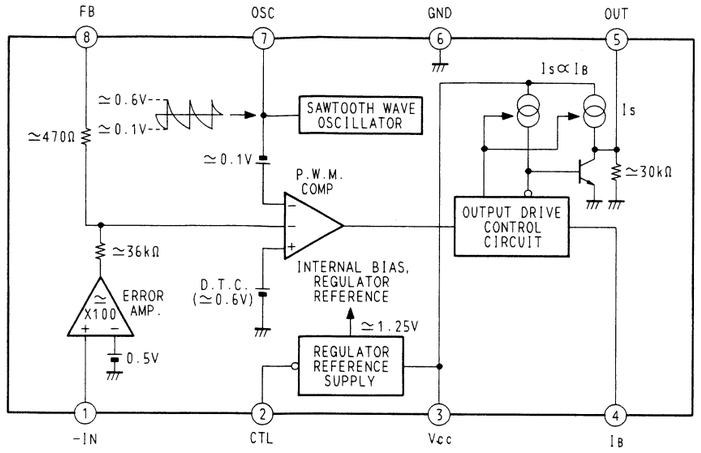
IC501 C



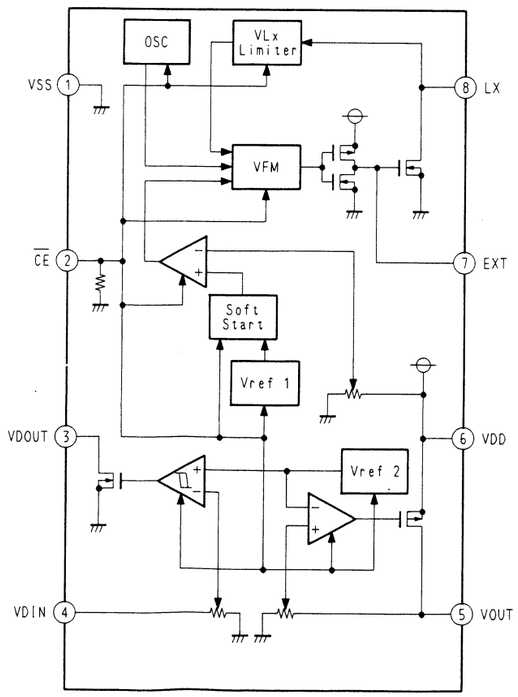
IC504 MPC



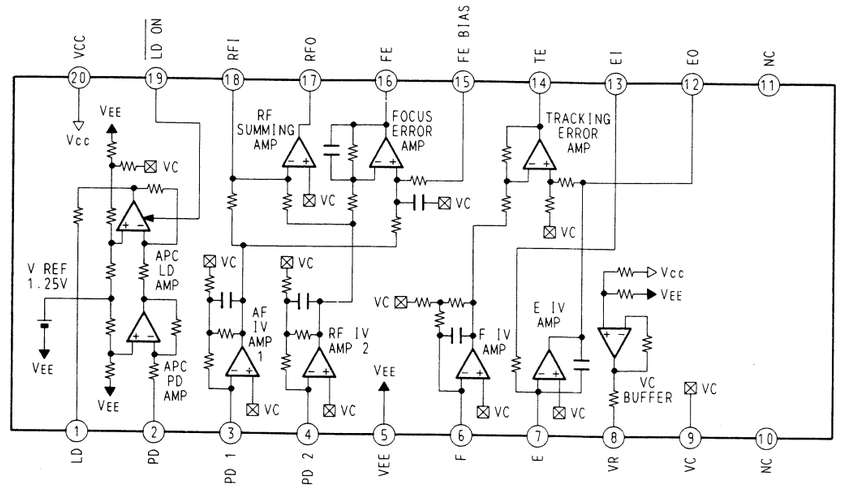
IC401 MB3776APNF-G-SNY-ER



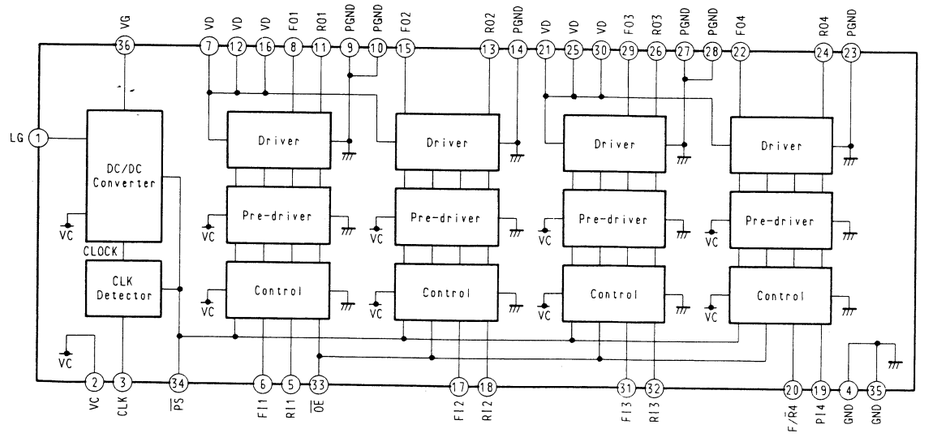
IC402 RS5RJ32271-T1



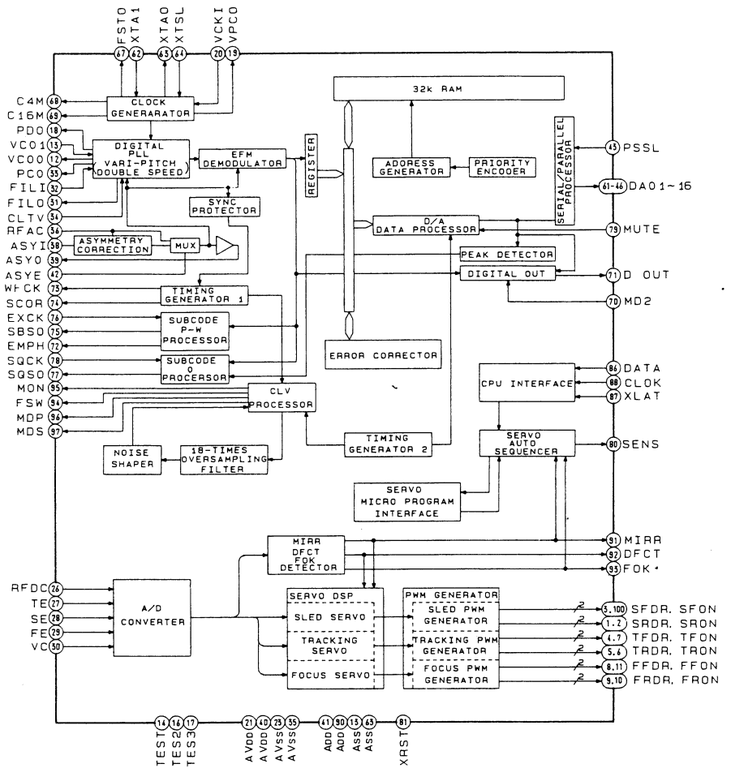
IC501 CXA1571N



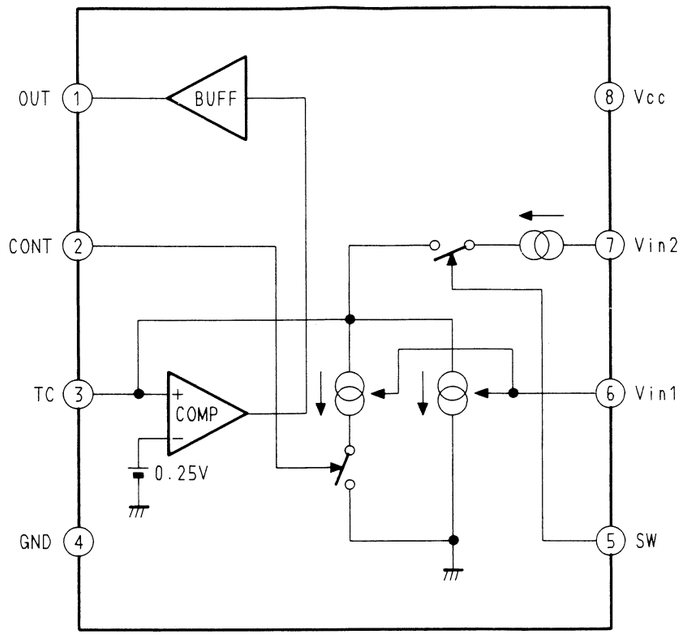
IC504 MPC17A38VMEL



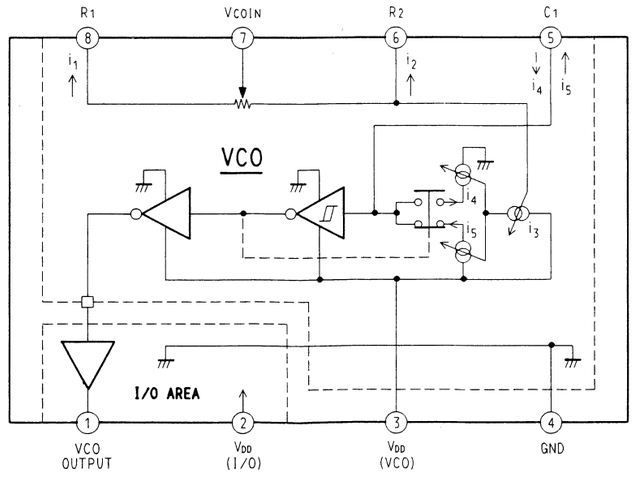
IC601 CXD2515Q



IC605 BA3890F



IC606 TLC2931IDB-ELL1000

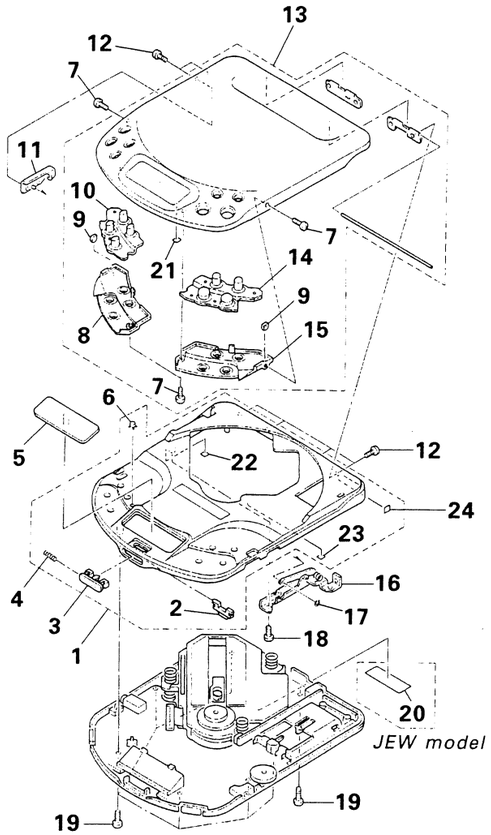


SECTION 5
EXPLODED VIEWS

NOTE:
- -xx,-x mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE)...(RED)
  ↑ ↑
  Parts color Cabinet's color
- Items marked "＊" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (#mark) list is given in the last of this parts list.
- Abbreviations
  AUS: Australian
  JEW: Tourist
  AEC: French, Austrian, East European, Swiss, Italian, German
  AEL: Netherlands, North European, Spanish, Belgium, Poland

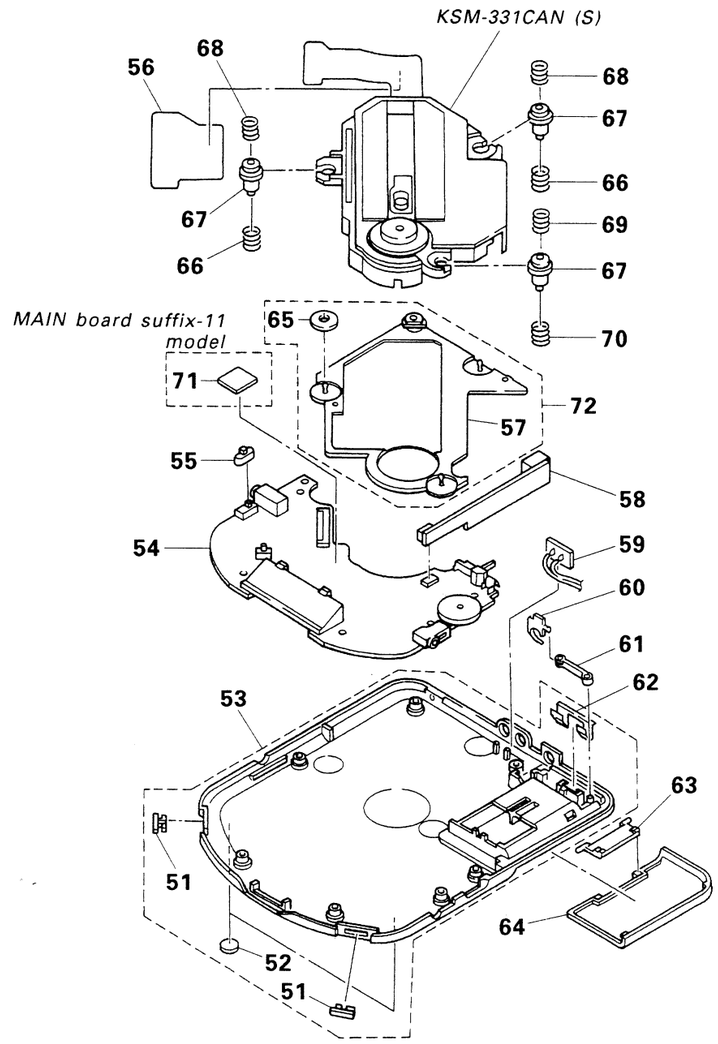
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. CABINET SECTION-1



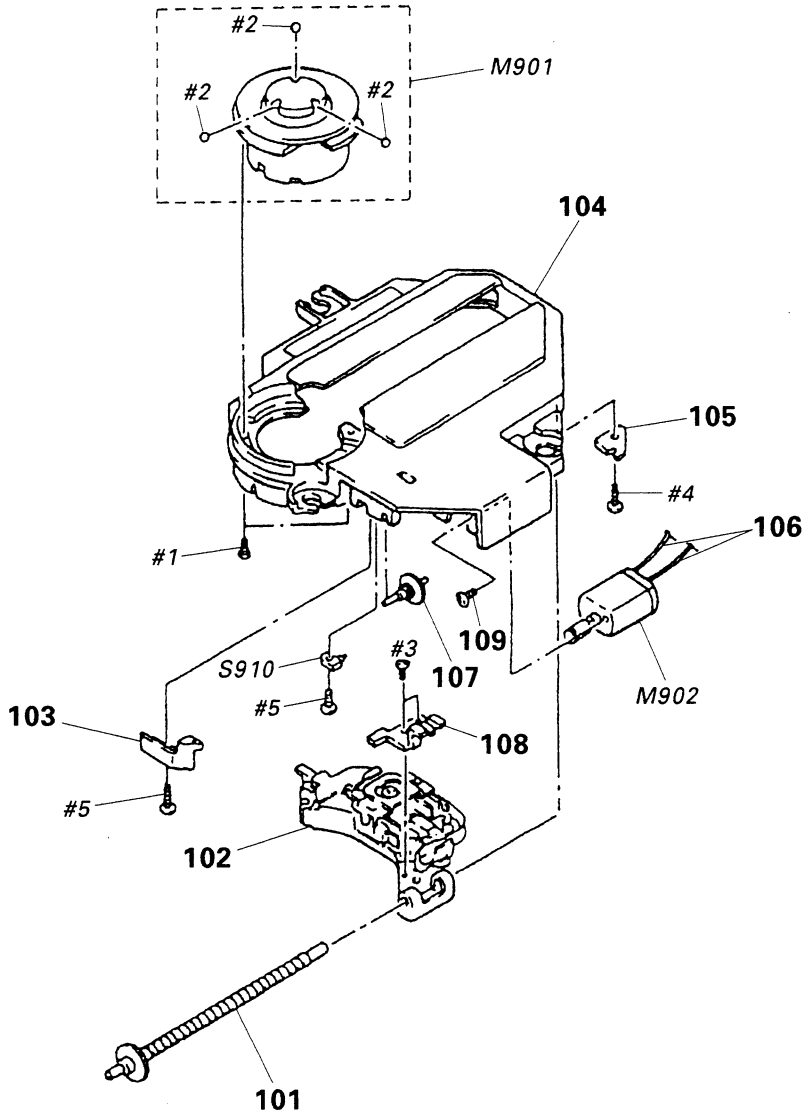
Ref.No.	Part No.	Description	Remark
1	X-4943-871-2	CABINET (UPPER) ASSY	
2	4-959-916-01	LEVER, LOCK	
3	4-959-917-01	KNOB (OPEN)	
4	4-959-918-01	SPRING, COMPRESSION	
5	4-959-923-02	WINDOW (CABINET)	
6	4-959-924-01	BUTTON (RELAY)	
7	3-704-197-23	SCREW (M1.4X2.5), LOCKING	
8	4-959-926-01	COVER (L)	
9	4-916-684-01	HOLDER, LOCK CLAW	
10	4-959-929-01	BUTTON (L), UPPER CONTROL	
11	X-4943-880-2	BRACKET ASSY, P	
12	3-704-197-13	SCREW (M1.4X2.0), LOCKING	
13	X-4943-873-1	PANEL ASSY, UPPER	
14	4-959-930-01	BUTTON (R), UPPER CONTROL	
15	4-959-925-01	COVER (R)	
16	X-4943-872-1	SWITCHING ASSY	
17	3-318-236-01	WASHER, POLY, SLIT	
18	4-945-318-01	SCREW	
19	4-951-291-01	SCREW	
＊20	3-703-034-01	LABEL, CAUTION (JEW)	
＊21	3-693-915-01	SPACER (SW)	
＊22	4-961-837-01	SPACER	
＊23	4-961-837-11	SPACER	
＊24	4-961-916-01	SPACER	

5-2. CABINET SECTION-2



Ref.No.	Part No.	Description	Remark
51	4-959-905-01	KNOB (H.AV)	
52	4-912-641-01	FOOT, RUBBER	
53	X-4943-869-1	CABINET (LOWER) ASSY	
54	A-3264-637-A	MOUNTED PCB (LEAD), MAIN (EXCEPT UK)	
54	A-3264-787-A	MOUNTED PCB (LEAD), MAIN (UK)	
＊55	4-961-553-01	KNOB (RESUME)	
＊56	4-956-818-01	RETAINER, FLEXIBLE	
＊57	4-959-931-01	BRACKET	
＊58	1-648-946-11	JACK BOARD	
59	1-537-572-11	TERMINAL, BATTERY	
＊60	4-961-288-01	PLATE, PREVENTION	
＊61	4-961-287-01	ARM	
62	4-959-932-01	TERMINAL BOARD (RELAY),BATTERY	
63	4-959-907-01	HINGE (BATTERY CASE LID)	
64	4-959-906-01	LID, BATTERY CASE	
65	4-961-827-01	WASHER	
66	4-961-116-02	SPRING (B) (LOWER), COIL	
67	4-959-412-01	INSULATOR, OIL	
68	4-961-120-11	SPRING (C) (UPPER), COIL	
69	4-961-118-02	SPRING (A) (UPPER), COIL	
70	4-961-115-02	SPRING (A) (LOWER), COIL	
＊71	1-649-681-11	TS BOARD	
72	X-4944-095-1	BRACKET ASSY	

5-3. OPTICAL PICK-UP BLOCK SECTION (KSM-331CAN (S))



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
101	X-2625-483-1	SCREW ASSY, SLED	
⚠102	8-848-295-21	PICK-UP, OPTICAL KSS-331C	
103	2-625-412-02	SPRING, SLED	
104	2-625-415-02	CHASSIS, MD	
105	2-625-411-01	RETAINER, SHAFT	
106	1-948-418-21	HARNESS	
107	2-625-410-01	GEAR (B)	
108	2-625-414-02	RACK	
109	3-732-988-01	SCREW (M2X2.5)	
M901	X-2625-485-1	MOTOR ASSY, T.T.	
M902	X-2625-171-2	MOTOR ASSY, SLED	
S910	1-570-771-11	SWITCH (LIMIT SW)	

SECTION 6
ELECTRICAL PARTS LIST

JACK **MAIN**

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ, for example:
  uA··· : μA···, uPA··· : μPA···, uPB··· : μPB···, uPC··· : μPC···, uPD··· : μPD···
- CAPACITORS
  uF : μF
- COILS
  uH : μH
- Abbreviations
  AUS: Australian
  JEW: Tourist
  AEC: French, Austrian, East European, Swiss, Italian, German
  AEL: Netherlands, North European, Spanish, Belgium, Poland

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref.No.	Part No.	Description			Remark
*	1-648-946-11	JACK BOARD (BOARD SUFFIX-11)			
*	1-648-946-13	JACK BOARD (BOARD SUFFIX-13)			
		**********			
		< CAPACITOR >			
C450	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C451	1-164-360-11	CERAMIC CHIP	0.1uF		16V
		< JACK >			
⚠CNJ401	1-580-681-21	JACK, DC (POLARITY UNIFIED TYPE) (DC IN 4.5V)			
**********					
*	A-3264-637-A	MAIN BOARD, COMPLETE (EXCEPT UK)			
*	A-3264-787-A	MAIN BOARD, COMPLETE (UK)			
		**********			
	3-831-441-XX	SPACER, KNOB			
	3-831-441-11	CUSHION (B)			
	4-944-347-01	TERMINAL BOARD (+), BATTERY			
	4-944-348-01	TERMINAL BOARD (-), BATTERY			
	4-944-363-11	SEPARATOR			
	4-959-359-01	SHEET (PTOC CHASSIS), ADHESIVE			
	4-959-908-01	HOLDER (LCD)			
*	4-959-915-01	SHEET, DIFFUSION			
		< CAPACITOR >			
C101	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C103	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C104	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C105	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C106	1-126-608-11	ELECT	330uF	20%	2V
C107	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C108	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C109	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C110	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C111	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C112	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
				(BOARD SUFFIX-13)	
C201	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C203	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V

Ref.No.	Part No.	Description			Remark
C204	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C205	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C206	1-126-608-11	ELECT	330uF	20%	2V
C207	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C208	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C209	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C210	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C211	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C212	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
				(BOARD SUFFIX-13)	
C301	1-135-317-11	TANTAL. CHIP	33uF	20%	2.5V
C302	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C303	1-164-234-11	CERAMIC CHIP	1uF		10V
C304	1-135-202-21	TANTAL. CHIP	22uF	20%	4V
C305	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C306	1-164-234-11	CERAMIC CHIP	1uF		10V
				(BOARD SUFFIX-11)	
C307	1-135-202-21	TANTAL. CHIP	22uF	20%	4V
C308	1-164-234-11	CERAMIC CHIP	1uF		10V
C309	1-135-316-11	TANTAL. CHIP	22uF	20%	2.5V
C310	1-164-234-11	CERAMIC CHIP	1uF		10V
C311	1-135-317-11	TANTAL. CHIP	33uF	20%	2.5V
C312	1-135-316-11	TANTAL. CHIP	22uF	20%	2.5V
C314	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C315	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C316	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C318	1-135-316-11	TANTAL. CHIP	22uF	20%	2.5V
C319	1-126-209-11	ELECT	100uF	20%	4V
C322	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C323	1-135-317-11	TANTAL. CHIP	33uF	20%	2.5V
C324	1-126-209-11	ELECT	100uF	20%	4V
C401	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C402	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C403	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C404	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C405	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
				(BOARD SUFFIX-11)	
C405	1-164-360-11	CERAMIC CHIP	0.1uF		16V
				(BOARD SUFFIX-13)	
C406	1-135-201-11	TANTALUM CHIP	10uF	20%	4V

Ref.No.	Part No.	Description			Remark
C407	1-128-393-11	ELECT	100uF	20%	10V
C408	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C411	1-127-561-11	ELECT(SOLID)	33uF	20%	10V
C412	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C413	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C415	1-126-176-11	ELECT	220uF	20%	10V
C416	1-126-246-11	ELECT CHIP	220uF	20%	4V
C417	1-164-234-11	CERAMIC CHIP	1uF		10V
C418	1-164-234-11	CERAMIC CHIP	1uF		10V
C419	1-135-168-21	TANTAL. CHIP	100uF	20%	4V
C421	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C422	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C423	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C424	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C501	1-135-317-11	TANTAL. CHIP	33uF	20%	2.5V
C503	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C504	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C505	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C506	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C507	1-135-318-11	TANTAL. CHIP	33uF	20%	4V
C509	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C510	1-107-493-91	TANTAL. CHIP	47uF	20%	2.5V
C512	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C520	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C528	1-128-393-11	ELECT	100uF	20%	10V
C529	1-164-234-11	CERAMIC CHIP	1uF		10V (BOARD SUFFIX-11)
C529	1-135-179-11	TANTAL. CHIP	2.2uF	20%	16V (BOARD SUFFIX-13)
C530	1-126-607-11	ELECT CHIP	47uF	20%	4V
C531	1-126-607-11	ELECT CHIP	47uF	20%	4V
C532	1-126-607-11	ELECT CHIP	47uF	20%	4V
C533	1-126-607-11	ELECT CHIP	47uF	20%	4V
C536	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C601	1-164-473-11	CERAMIC CHIP	820PF	5%	50V (BOARD SUFFIX-11)
C601	1-164-362-11	CERAMIC CHIP	470PF	5%	50V (BOARD SUFFIX-13)
C602	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C603	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C604	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C605	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C606	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C607	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C609	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C610	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C611	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C612	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C613	1-135-201-11	TANTALUM CHIP	10uF	20%	4V (BOARD SUFFIX-11)

Ref.No.	Part No.	Description			Remark
C614	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C615	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C616	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C618	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V (BOARD SUFFIX-11)
C618	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V (BOARD SUFFIX-13)
C619	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C620	1-162-953-11	CERAMIC CHIP	100PF	5%	50V (BOARD SUFFIX-13)
C621	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (BOARD SUFFIX-13)
C622	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C623	1-162-953-11	CERAMIC CHIP	100PF	5%	50V (BOARD SUFFIX-13)
C624	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C625	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C626	1-164-234-11	CERAMIC CHIP	1uF		10V
C630	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C650	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C651	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C652	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C653	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C654	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C655	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C672	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C801	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C802	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C803	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C804	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C805	1-104-847-91	TANTAL. CHIP	22uF	20%	4V
C807	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C809	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C810	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C831	1-164-234-11	CERAMIC CHIP	1uF		10V
C832	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C833	1-164-360-11	CERAMIC CHIP	0.1uF		16V

< CONNECTOR >

*CN401	1-580-712-21	CONNECTOR, BOARD TO BOARD 5P	
CN403	1-695-320-81	PIN, CONNECTOR (1.5MM)(SMD) 2P	
CN501	1-566-534-11	CONNECTOR, FPC (ZIF) 18P	
*CN502	1-695-320-11	PIN, CONNECTOR (1.5MM)(SMD) 2P	
*CN503	1-695-320-31	PIN, CONNECTOR (1.5MM)(SMD) 2P	
*CN504	1-695-320-51	PIN, CONNECTOR (1.5MM)(SMD) 2P	

< DIODE >

D301	8-719-941-23	DIODE	DA204U
D302	8-719-044-74	DIODE	MA792WK

MAIN

Ref.No.	Part No.	Description	Remark
D303	8-719-941-09	DIODE DAP202U	
D304	8-719-941-86	DIODE DAN202U	
D305	8-719-941-86	DIODE DAN202U	
D401	8-719-941-86	DIODE DAN202U	
D402	8-719-938-72	DIODE SB01-05CP	
D403	8-719-938-72	DIODE SB01-05CP	
D404	8-719-313-73	DIODE SFPB-52V	
D405	8-719-938-72	DIODE SB01-05CP	
D406	8-719-938-72	DIODE SB01-05CP	
D501	8-719-938-72	DIODE SB01-05CP	
D802	8-719-941-86	DIODE DAN202U	
D803	8-719-941-09	DIODE DAP202U	
D805	8-719-017-58	DIODE MA8068	
D807	8-719-313-73	DIODE SFPB-52V	
D809	8-719-941-09	DIODE DAP202U	
D851	8-719-987-41	LED CL-150Y-CD (BACK LIGHT)	
D852	8-719-987-41	LED CL-150Y-CD (BACK LIGHT)	
D853	8-719-987-41	LED CL-150Y-CD (BACK LIGHT)	
D854	8-719-987-41	LED CL-150Y-CD (BACK LIGHT)	
D855	8-719-987-41	LED CL-150Y-CD (BACK LIGHT)	
		< FERRITE BEAD >	
FB101	1-414-135-11	INDUCTOR CHIP 0uH	(BOARD SUFFIX-13)
FB102	1-414-234-21	INDUCTOR, FERRITE BEAD	(BOARD SUFFIX-13)
FB201	1-414-135-11	INDUCTOR CHIP 0uH	(BOARD SUFFIX-13)
FB202	1-414-234-21	INDUCTOR, FERRITE BEAD	(BOARD SUFFIX-13)
FB301	1-414-135-11	INDUCTOR CHIP 0uH	(BOARD SUFFIX-13)
FB302	1-414-234-21	INDUCTOR, FERRITE BEAD	(BOARD SUFFIX-13)
FB303	1-414-234-21	INDUCTOR, FERRITE BEAD	(BOARD SUFFIX-13)
FB601	1-414-135-11	INDUCTOR CHIP 0uH	
FB602	1-414-135-11	INDUCTOR CHIP 0uH	
		< IC >	
IC301	8-759-177-67	IC SM5853BF	
IC302	8-759-802-75	IC LA4533M	
IC303	8-759-177-70	IC TLV2362ID-ELL2500	
IC401	8-759-097-95	IC MB3776APNF-G-SNY-ER	
IC402	8-759-176-73	IC RS5RJ32271-T1	
IC403	8-759-177-70	IC TLV2362ID-ELL2500	
IC501	8-752-059-39	IC CXA1571N	
IC504	8-759-179-60	IC MPC17A38VMEL	
IC601	8-752-351-94	IC CXD2515Q	
IC602	8-759-179-71	IC RF5C241	
IC603	8-752-361-17	IC CXK414400TM-12V	
IC605	8-759-179-64	IC BA3890F	
IC606	8-759-177-71	IC TLC2931IDB-ELL1000	
IC801	8-752-845-09	IC CXP83916-603Q	
		< JACK >	
J302	1-568-758-11	JACK (Ω REMOTE)	
J303	8-759-188-89	IC GP1F363T (OPTICAL(DIGITAL)/LINE OUT)	

Ref.No.	Part No.	Description	Remark
		< COIL >	
L301	1-412-029-11	INDUCTOR CHIP 10uH	
L302	1-410-997-31	INDUCTOR CHIP 2.2uH	
L304	1-410-997-31	INDUCTOR CHIP 2.2uH	
L305	1-412-029-11	INDUCTOR CHIP 10uH	
L307	1-406-890-21	FILTER, COMMON MODE	(BOARD SUFFIX-13)
L402	1-412-622-51	INDUCTOR 10uH	
L403	1-412-630-51	INDUCTOR 47uH	
L404	1-412-029-11	INDUCTOR CHIP 10uH	
L405	1-412-029-11	INDUCTOR CHIP 10uH	
L501	1-412-029-11	INDUCTOR CHIP 10uH	
L503	1-412-039-51	INDUCTOR CHIP 100uH	
L521	1-410-980-51	INDUCTOR CHIP 1mH	
L530	1-412-039-51	INDUCTOR CHIP 100uH	
L531	1-412-039-51	INDUCTOR CHIP 100uH	
L601	1-410-997-31	INDUCTOR CHIP 2.2uH	
		< LIQUID CRYSTAL DISPLAY >	
LCD801	1-810-161-11	DISPLAY PANEL, LIQUID CRYSTAL	
		< TRANSISTOR >	
Q301	8-729-425-18	TRANSISTOR XN4504	
Q302	8-729-422-39	TRANSISTOR XN4404	
Q303	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q304	8-729-231-76	TRANSISTOR 2SC4116GL-TE85R	
Q305	8-729-425-18	TRANSISTOR XN4504	
Q306	8-729-902-90	TRANSISTOR FMA4	
Q307	8-729-903-10	TRANSISTOR FMW1	
Q308	8-729-904-86	TRANSISTOR 2SB1197K-Q	
Q309	8-729-903-10	TRANSISTOR FMW1	
Q310	8-729-904-86	TRANSISTOR 2SB1197K-Q	
Q311	8-729-907-39	TRANSISTOR IMD2	
Q312	8-729-402-XX	TRANSISTOR XN4112	
Q313	8-729-907-39	TRANSISTOR IMD2	
Q314	8-729-905-18	TRANSISTOR DTC144EU	
Q401	8-729-403-02	TRANSISTOR XN4212	
Q403	8-729-920-56	TRANSISTOR FMG1	
Q404	8-729-923-36	TRANSISTOR 2SD1963-Q.R	
Q405	8-729-022-67	TRANSISTOR 2SC3650-TD	
Q406	8-729-905-57	TRANSISTOR DTA124EU	
Q408	8-729-922-34	TRANSISTOR 2SD1758F5-QR	
Q409	8-729-231-76	TRANSISTOR 2SC4116GL-TE85R	
Q410	8-729-905-57	TRANSISTOR DTA124EU	
Q421	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q501	8-729-904-87	TRANSISTOR 2SB1197K-R	
Q502	8-729-922-94	TRANSISTOR DTC143TU	
Q503	8-729-924-79	TRANSISTOR FMG8	
Q504	8-729-924-79	TRANSISTOR FMG8	

Ref.No.	Part No.	Description		Remark
Q505	8-729-907-39	TRANSISTOR	IMD2	
Q506	8-729-231-76	TRANSISTOR	2SC4116GL-TE85R	
Q602	8-729-905-61	TRANSISTOR	DTC124EU	(BOARD SUFFIX-11)
Q610	8-729-905-61	TRANSISTOR	DTC124EU	(BOARD SUFFIX-13)
Q671	8-729-402-84	TRANSISTOR	XN4601	
Q672	8-729-905-57	TRANSISTOR	DTA124EU	
Q801	8-729-905-18	TRANSISTOR	DTC144EU	
Q810	8-729-231-76	TRANSISTOR	2SC4116GL-TE85R	
Q851	8-729-921-73	TRANSISTOR	2SD1781K-QR	
Q852	8-729-905-57	TRANSISTOR	DTA124EU	
		< RESISTOR >		
R101	1-216-813-11	METAL CHIP	220 5% 1/16W	
R102	1-216-845-11	METAL CHIP	100K 5% 1/16W	
R103	1-216-864-11	METAL CHIP	0 5% 1/16W	(BOARD SUFFIX-11)
R104	1-216-793-11	METAL GLAZE	4.7 5% 1/16W	
R105	1-216-796-11	METAL GLAZE	8.2 5% 1/16W	
R106	1-216-821-11	METAL CHIP	1K 5% 1/16W	
R107	1-216-815-11	METAL CHIP	330 5% 1/16W	
R108	1-216-789-11	METAL CHIP	2.2 5% 1/16W	
R109	1-216-823-11	METAL CHIP	1.5K 5% 1/16W	
R110	1-216-845-11	METAL CHIP	100K 5% 1/16W	
R111	1-216-295-00	METAL CHIP	0 5% 1/10W	(BOARD SUFFIX-11)
R112	1-216-834-11	METAL CHIP	12K 5% 1/16W	
R113	1-216-834-11	METAL CHIP	12K 5% 1/16W	
R114	1-216-837-11	METAL CHIP	22K 5% 1/16W	
R115	1-216-837-11	METAL CHIP	22K 5% 1/16W	
R116	1-216-839-11	METAL CHIP	33K 5% 1/16W	
R117	1-216-839-11	METAL CHIP	33K 5% 1/16W	
R118	1-216-843-11	METAL CHIP	68K 5% 1/16W	
R119	1-216-843-11	METAL CHIP	68K 5% 1/16W	
R120	1-216-846-11	METAL CHIP	120K 5% 1/16W	
R201	1-216-813-11	METAL CHIP	220 5% 1/16W	
R202	1-216-845-11	METAL CHIP	100K 5% 1/16W	
R203	1-216-864-11	METAL CHIP	0 5% 1/16W	(BOARD SUFFIX-11)
R204	1-216-793-11	METAL GLAZE	4.7 5% 1/16W	
R205	1-216-796-11	METAL GLAZE	8.2 5% 1/16W	
R206	1-216-821-11	METAL CHIP	1K 5% 1/16W	
R207	1-216-815-11	METAL CHIP	330 5% 1/16W	
R208	1-216-789-11	METAL CHIP	2.2 5% 1/16W	
R209	1-216-823-11	METAL CHIP	1.5K 5% 1/16W	
R210	1-216-845-11	METAL CHIP	100K 5% 1/16W	
R211	1-216-295-00	METAL CHIP	0 5% 1/10W	(BOARD SUFFIX-11)
R212	1-216-834-11	METAL CHIP	12K 5% 1/16W	
R213	1-216-834-11	METAL CHIP	12K 5% 1/16W	
R214	1-216-837-11	METAL CHIP	22K 5% 1/16W	
R215	1-216-837-11	METAL CHIP	22K 5% 1/16W	
R216	1-216-839-11	METAL CHIP	33K 5% 1/16W	

Ref.No.	Part No.	Description		Remark
R217	1-216-839-11	METAL CHIP	33K 5% 1/16W	
R218	1-216-843-11	METAL CHIP	68K 5% 1/16W	
R219	1-216-843-11	METAL CHIP	68K 5% 1/16W	
R220	1-216-846-11	METAL CHIP	120K 5% 1/16W	
R301	1-216-823-11	METAL CHIP	1.5K 5% 1/16W	
R302	1-216-823-11	METAL CHIP	1.5K 5% 1/16W	
R303	1-216-809-11	METAL CHIP	100 5% 1/16W	
R304	1-216-809-11	METAL CHIP	100 5% 1/16W	
R305	1-216-817-11	METAL CHIP	470 5% 1/16W	
R306	1-216-295-00	METAL CHIP	0 5% 1/10W	(BOARD SUFFIX-11)
R307	1-216-813-11	METAL CHIP	220 5% 1/16W	
R308	1-216-849-11	METAL CHIP	220K 5% 1/16W	
R309	1-216-833-11	METAL CHIP	10K 5% 1/16W	
R310	1-216-823-11	METAL CHIP	1.5K 5% 1/16W	
R311	1-216-823-11	METAL CHIP	1.5K 5% 1/16W	
R312	1-216-812-11	METAL CHIP	180 5% 1/16W	
R313	1-216-833-11	METAL CHIP	10K 5% 1/16W	
R314	1-216-839-11	METAL CHIP	33K 5% 1/16W	
R315	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	
R316	1-216-818-11	METAL CHIP	560 5% 1/16W	
R317	1-218-718-11	METAL CHIP	12K 0.50% 1/16W	
R318	1-218-716-11	METAL CHIP	10K 0.50% 1/16W	
R319	1-216-821-11	METAL CHIP	1K 5% 1/16W	
R320	1-218-718-11	METAL CHIP	12K 0.50% 1/16W	
R321	1-216-817-11	METAL CHIP	470 5% 1/16W	
R322	1-218-716-11	METAL CHIP	10K 0.50% 1/16W	
R323	1-216-840-11	METAL CHIP	39K 5% 1/16W	
R351	1-216-857-11	METAL CHIP	1M 5% 1/16W	
R360	1-216-833-11	METAL CHIP	10K 5% 1/16W	
R361	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	
R362	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	
R363	1-216-833-11	METAL CHIP	10K 5% 1/16W	
R364	1-216-295-00	METAL CHIP	0 5% 1/10W	(BOARD SUFFIX-11)
R401	1-216-854-11	METAL CHIP	560K 5% 1/16W	
R402	1-216-827-11	METAL CHIP	3.3K 5% 1/16W	
R403	1-216-824-11	METAL CHIP	1.8K 5% 1/16W	
R404	1-216-805-11	METAL CHIP	47 5% 1/16W	
R405	1-216-833-11	METAL CHIP	10K 5% 1/16W	
R409	1-218-720-11	METAL CHIP	15K 0.50% 1/16W	
R410	1-218-724-11	METAL CHIP	22K 0.50% 1/16W	
R411	1-216-821-11	METAL CHIP	1K 5% 1/16W	
R412	1-218-330-11	METAL CHIP	11K 0.50% 1/16W	
R414	1-217-671-11	METAL CHIP	1 5% 1/10W	
R415	1-217-671-11	METAL CHIP	1 5% 1/10W	
R417	1-216-806-11	METAL GLAZE	56 5% 1/16W	
R418	1-216-835-11	METAL CHIP	15K 5% 1/16W	
R419	1-216-832-11	METAL CHIP	8.2K 5% 1/16W	
R421	1-216-833-11	METAL CHIP	10K 5% 1/16W	

MAIN

Ref.No.	Part No.	Description				Remark
R422	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R423	1-216-846-11	METAL CHIP	120K	5%	1/16W	
R424	1-218-734-11	METAL CHIP	56K	0.50%	1/16W	
R425	1-218-724-11	METAL CHIP	22K	0.50%	1/16W	
R427	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R428	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R429	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R430	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R431	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R436	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R491	1-216-864-11	METAL CHIP	0	5%	1/16W	(BOARD SUFFIX-11)
R491	1-216-295-00	METAL CHIP	0	5%	1/10W	(BOARD SUFFIX-13)
R492	1-216-864-11	METAL CHIP	0	5%	1/16W	(BOARD SUFFIX-11)
R492	1-216-295-00	METAL CHIP	0	5%	1/10W	(BOARD SUFFIX-13)
R493	1-216-864-11	METAL CHIP	0	5%	1/16W	(BOARD SUFFIX-11)
R493	1-216-295-00	METAL CHIP	0	5%	1/10W	(BOARD SUFFIX-13)
R501	1-217-671-11	METAL CHIP	1	5%	1/10W	
R502	1-218-716-11	METAL CHIP	10K	0.50%	1/16W	
R503	1-218-716-11	METAL CHIP	10K	0.50%	1/16W	
R504	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R505	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R506	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R507	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R508	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R509	1-218-332-11	METAL GLAZE	130K	5%	1/16W	
R510	1-216-850-11	METAL CHIP	270K	5%	1/16W	
R511	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R512	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R513	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R514	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R515	1-218-739-11	METAL CHIP	91K	0.50%	1/16W	
R516	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R517	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R518	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R519	1-216-864-11	METAL CHIP	0	5%	1/16W	
R521	1-218-286-11	METAL GLAZE	91	5%	1/16W	
R522	1-216-864-11	METAL CHIP	0	5%	1/16W	
R528	1-218-735-11	METAL CHIP	62K	0.50%	1/16W	
R529	1-218-735-11	METAL CHIP	62K	0.50%	1/16W	
R530	1-218-735-11	METAL CHIP	62K	0.50%	1/16W	
R531	1-218-735-11	METAL CHIP	62K	0.50%	1/16W	
R532	1-218-744-11	METAL CHIP	150K	0.50%	1/16W	
R533	1-218-744-11	METAL CHIP	150K	0.50%	1/16W	
R541	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R542	1-216-861-11	METAL CHIP	2.2M	5%	1/16W	
R571	1-216-864-11	METAL CHIP	0	5%	1/16W	(BOARD SUFFIX-11)
R571	1-216-295-00	METAL CHIP	0	5%	1/10W	(BOARD SUFFIX-13)
R601	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R602	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R603	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R604	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R605	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R606	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R607	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R608	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R609	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R610	1-216-864-11	METAL CHIP	0	5%	1/16W	
R611	1-218-735-11	METAL CHIP	62K	0.50%	1/16W	
R612	1-216-809-11	METAL CHIP	100	5%	1/16W	
R613	1-216-857-11	METAL CHIP	1M	5%	1/16W	(BOARD SUFFIX-11)
R614	1-216-865-11	METAL CHIP	3K	5%	1/16W	(BOARD SUFFIX-11)
R614	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	(BOARD SUFFIX-13)
R615	1-218-740-11	METAL CHIP	100K	0.50%	1/16W	
R616	1-216-833-11	METAL CHIP	10K	5%	1/16W	(BOARD SUFFIX-13)
R617	1-216-833-11	METAL CHIP	10K	5%	1/16W	(BOARD SUFFIX-13)
R621	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R631	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R650	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R651	1-216-835-11	METAL CHIP	15K	5%	1/16W	(BOARD SUFFIX-11)
R651	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	(BOARD SUFFIX-13)
R652	1-218-740-11	METAL CHIP	100K	0.50%	1/16W	
R653	1-216-864-11	METAL CHIP	0	5%	1/16W	
R654	1-218-716-11	METAL CHIP	10K	0.50%	1/16W	
R655	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R656	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R660	1-218-716-11	METAL CHIP	10K	0.50%	1/16W	
R661	1-218-740-11	METAL CHIP	100K	0.50%	1/16W	
R663	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R665	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R671	1-216-809-11	METAL CHIP	100	5%	1/16W	
R672	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R673	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R674	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R675	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R676	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R677	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R801	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R802	1-218-345-11	METAL CHIP	9.1K	0.50%	1/16W	
R803	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R804	1-216-821-11	METAL CHIP	1K	5%	1/16W	

Ref.No.	Part No.	Description			Remark
R805	1-216-821-11	METAL CHIP	1K	5%	1/16W
R806	1-216-845-11	METAL CHIP	100K	5%	1/16W
R808	1-216-857-11	METAL CHIP	1M	5%	1/16W
R811	1-218-716-11	METAL CHIP	10K	0.50%	1/16W
R812	1-216-820-11	METAL CHIP	820	5%	1/16W
R813	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R814	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R815	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R816	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R817	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R819	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R821	1-216-837-11	METAL CHIP	22K	5%	1/16W
R822	1-216-837-11	METAL CHIP	22K	5%	1/16W
R823	1-216-837-11	METAL CHIP	22K	5%	1/16W
R824	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R825	1-216-857-11	METAL CHIP	1M	5%	1/16W
R826	1-216-857-11	METAL CHIP	1M	5%	1/16W
R827	1-216-864-11	METAL CHIP	0	5%	1/16W
R829	1-218-716-11	METAL CHIP	10K	0.50%	1/16W
R832	1-216-857-11	METAL CHIP	1M	5%	1/16W
R835	1-216-861-11	METAL CHIP	2.2M	5%	1/16W
R836	1-216-854-11	METAL CHIP	560K	5%	1/16W
R841	1-218-716-11	METAL CHIP	10K	0.50%	1/16W
R842	1-218-738-11	METAL CHIP	82K	0.50%	1/16W
R843	1-216-295-00	METAL CHIP	0	5%	1/10W
R844	1-216-857-11	METAL CHIP	1M	5%	1/16W
R845	1-216-857-11	METAL CHIP	1M	5%	1/16W
R846	1-216-821-11	METAL CHIP	1K	5%	1/16W
R851	1-216-804-11	METAL CHIP	39	5%	1/16W
R852	1-216-804-11	METAL CHIP	39	5%	1/16W
R853	1-216-804-11	METAL CHIP	39	5%	1/16W
R854	1-216-804-11	METAL CHIP	39	5%	1/16W
R855	1-216-804-11	METAL CHIP	39	5%	1/16W
		< VARIABLE RESISTOR >			
RV301	1-223-469-11	RES, VAR, CARBON 10K/10K (VOLUME)			
RV650	1-238-088-11	RES, ADJ, CERMET	2.2K		
		< SWITCH >			
S301	1-571-506-41	SWITCH, SLIDE (AVLS)			
S401	1-692-532-21	SWITCH, PUSH (1 KEY) (BATTERY DETECT)			
S802	1-692-688-11	SWITCH, SLIDE (RESUME)			
S810	1-692-373-21	SWITCH, PUSH (1 KEY) (DOOR SWITCH)			
S811	1-571-275-31	SWITCH, SLIDE (HOLD)			
S820	1-572-438-11	SWITCH, TACTIL (▶II)			
S821	1-572-438-11	SWITCH, TACTIL (■)			
S822	1-572-438-11	SWITCH, TACTIL (⏭)			
S823	1-572-438-11	SWITCH, TACTIL (⏮)			
S824	1-572-438-11	SWITCH, TACTIL (REPEAT/ENTER)			
S825	1-572-438-11	SWITCH, TACTIL (PLAY MODE)			
S826	1-572-438-11	SWITCH, TACTIL (DSP)			
S828	1-572-438-11	SWITCH, TACTIL (ESP)			
		< TRANSFORMER >			
T401	1-423-636-11	TRANSFORMER, DC-DC CONVERTER			
		< THERMISTOR >			
TH601	1-810-235-11	THERMISTOR, POSITIVE (BOARD SUFFIX-11)			
TH601	1-810-236-11	THERMISTOR, POSITIVE (BOARD SUFFIX-13)			
		< VIBRATOR >			
X301	1-760-023-21	VIBRATOR, CRYSTAL (16.9MHz)			
X801	1-579-063-21	VIBRATOR, CERAMIC (4.19MHz)			
**********					
*	1-649-681-11	TS BOARD (MAIN BOARD SUFFIX-11)			
		**********			
		< CAPACITOR >			
C2	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< TRANSISTOR >			
Q1	8-729-905-61	TRANSISTOR DTC124EU			
		< RESISTOR >			
R1	1-216-833-11	METAL CHIP	10K	5%	1/16W
R2	1-216-833-11	METAL CHIP	10K	5%	1/16W
**********					
		MISCELLANEOUS			
		**********			
59	1-537-572-11	TERMINAL, BATTERY			
⚠102	8-848-295-21	PICK-UP, OPTICAL KSS-331C			
106	1-948-418-21	HARNESS			
M901	X-2625-485-1	MOTOR ASSY, T.T.			
M902	X-2625-171-2	MOTOR ASSY, SLED			
S910	1-570-771-11	SWITCH (LIMIT SW)			
**********					
		ACCESSORIES & PACKING MATERIALS			
		**********			
⚠	1-467-007-21	ADAPTOR, AC (AC-E455) (AUS)			
⚠	1-467-008-11	ADAPTOR, AC (AC-E455) (AEC, AEL)			
⚠	1-467-009-11	ADAPTOR, AC (AC-E455) (US)			
⚠	1-467-011-11	ADAPTOR, AC (AC-E455) (E, JEW)			
⚠	1-467-013-11	ADAPTOR, AC (AC-E455) (UK)			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
	1-467-196-11	REMOTE CONTROL UNIT (RM-DM14L) (EXCEPT US)	
	1-528-444-11	BATTERY PACK (BP-DM10) (UK,E,AUS,JEW)	
	1-528-444-21	BATTERY PACK (BP-DM10) (AEC,AEL)	
	1-528-444-31	BATTERY PACK (BP-DM10) (US)	
	1-550-920-11	BATTERY CASE	
	1-555-658-21	CORD, CONNECTION (EXCEPT JEW)	
⚠	1-569-007-11	ADAPTER, CONVERSION 2P (E,JEW)	
	3-757-179-01	MANUAL, INSTRUCTION (JAPANESE) (JEW)	
	3-757-179-11	MANUAL, INSTRUCTION (SPANISH) (AEC,AEL,E,JEW)	
	3-757-179-21	MANUAL, INSTRUCTION (ENGLISH) (US)	
	3-757-179-31	MANUAL, INSTRUCTION (FRENCH) (AEC,AEL,E,JEW)	
	3-757-179-41	MANUAL, INSTRUCTION (DUTCH) (AEC)	
	3-757-179-51	MANUAL, INSTRUCTION (SWEDISH) (AEC)	
	3-757-179-61	MANUAL, INSTRUCTION (PORTUGUESE) (AEC)	
	3-757-179-71	MANUAL, INSTRUCTION (GERMAN) (AEL)	
	3-757-179-81	MANUAL, INSTRUCTION (ITALIAN) (AEL)	
	3-757-179-91	MANUAL, INSTRUCTION (ENGLISH) (AEC,AEL,UK,E,AUS,JEW)	
	3-757-214-41	MANUAL, INSTRUCTION (JEW)	
*	4-957-230-01	CUSHION (UPPER)	
	4-959-686-01	CASE, CARRYING	
	4-959-777-01	INDIVIDUAL CARTON (US)	
	4-959-780-01	CUSHION (LOWER) (US)	
	4-959-782-01	INDIVIDUAL CARTON (AEC,AEL,UK,E,JEW)	
	4-959-784-01	CUSHION (LOWER) (AEC,AEL,UK,E,JEW)	
	4-959-785-01	CUSHION (LOWER) (AUS)	
	4-959-786-01	INDIVIDUAL CARTON (AUS)	
	8-953-487-92	HEADPHONE MDR-14B/2 SET (US)	
	8-953-537-91	HEADPHONE MDR-E741MP//K1 SET (EXCEPT US)	

****

****
HARDWARE LIST
****

#1	7-627-852-18	SCREW,PRECISION +P 1.7X4 TYPE3
#2	7-671-155-01	STEEL BALL 3.0
#3	7-627-852-17	+P 1.7X4
#4	7-685-104-19	SCREW (2X6), TAPPING (B)
#5	7-685-105-19	SCREW (2X8), TAPPING (B)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

9-957-940-11

Sony Corporation
General Audio Group

English
93G1887-1
Printed in Japan
©1993.7
Published by Audio Sector Quality Assurance Dept.

D-321

SONY
SERVICE MANUAL

US Model
AEP Model
UK Model
E Model
Australian Model
Tourist Model

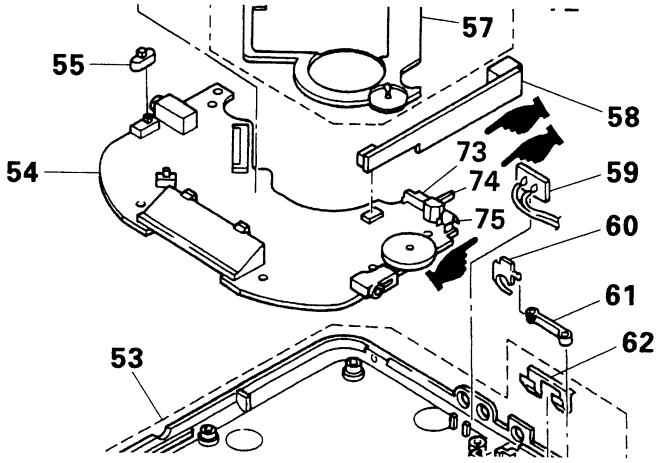
CORRECTION-1

Correct your service manual as shown below.

• SECTION 5. EXPLODED VIEWS

5-2. CABINET SECTION-2 (Service Manual Page 42)

☛ : Indicates added portion



	Ref.No.	Part No.	Description	Remark
☛	73	4-944-348-01	TERMINAL BOARD (−), BATTERY	
☛	*74	4-944-363-11	SEPARATOR	
☛	75	4-944-347-01	TERMINAL BOARD (+), BATTERY	

● Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

• SECTION 6. ELECTRICAL PARTS LIST

(Service Manual Page 44)

☛ : Indicates deleted portion

Page	INCORRECT		CORRECT
44	Part No.	Description	
	4-944-347-01	TERMINAL BOARD (+), BATTERY	——— ☛
	4-944-348-01	TERMINAL BOARD (−), BATTERY	——— ☛
	4-944-363-11	SEPARATOR	——— ☛

9-957-940-91

Sony Corporation
General Audio Group

English
93J1888-1D
Printed in Japan

©1993.10

Published by Audio Sector Quality Assurance Dept.